THE

WESTERN JOURNAL

OF

MEDICINE AND SURGERY.

DECEMBER, 1852.

ART. I. *Laryngismus Stridulus.* By J. W. BRIGHT, M. D., OF Louisville, Ky.

This is a disease of the Thymus gland of infants, and takes its name from the stridulous, or crowing, croaking sound in breathing. It assimulates croup and bronchitis in many of its symptoms. And the true character of the disease is detected in its early stage only by applying the ear to the chest of the patient. Delicate or scrofulous children, from the age of three or four months, to three or four years, are most liable to this disease. Males are more subject to it than females. It makes its onset by slight paroxysms of fever, not preceded by any perceptible chill or cold stage. The child appears to have taken cold. The cheeks are flushed, and the pulse is more or less accelerated. The breathing is more hurried than

usual, and difficult, owing to the pressure of the enlarged thymus gland upon the trachea. It is attended by a short troublesome cough. The phlegm is loose, but raised with difficulty, and when discharged, is white and frothy. The child is disposed to throw its head back, with its mouth open, and roll its tongue from side to side, with a chewing motion of the jaws. If it is old enough to raise its hand, it will make frequent efforts to thrust its fingers into its mouth. The phlegm appears to be loose and rattles, but no discharge is made by the effort of coughing. The bowels are inclined to be constipated; but when evacuations are obtained, they are not unnatural, except phlegm has been swallowed. The skin is sometimes dry and hot, but generally it is relaxed, and a cool sweat stands on the forehead; after a day or two has elapsed, the superior portion of the sternum is raised, and there is a fulness above the clavicles. The child sleeps but little, owing to the difficulty of breathing. The countenance is anxious, the complexion varies from a glossy paleness to a livid pallor. There is great thirst, and the child will take with avidity anything that is presented to its mouth. The pathology of this disease is often mistaken, and it is treated as for croup or bronchitis: and the patient falls a victim to a misdirected treatment.

Treatment.—This, as all other diseases, should be treated as the pathology requires.

First, relieve the stomach and bowels by a mercurial cathartic.

Secondly, keep down fever by the Spirits of Mindereri, and Spirits of Nitre, in the proportion of seven of the former to three of the latter. This should be given in repeated doses every hour, of ten drops, more or less, according to the age and strength of the patient. At the same time an ointment of the Iodide of Potassa (officinal) should be frequently applied over the sternum and above the clavicles. When the patient is free from fever, a solu-

tion of the Hydriodate of Potass, ten grains to the ounce of distilled water, should be given in ten drop doses (more or less, according to the age of the patient,) every two hours. The bowels should be kept open with small and frequently repeated doses of calomel, Ipecac, and Nitre. If the phlegm accumulates, and is not freely discharged, an emetic of alum and honey should be given. This is prepared by mixing one drachm of pulverised alum in one ounce of strained honey. Give a teaspoonful every ten minutes till the child pukes freely, and discharges the phlegm. This emetic may be repeated as often as the circumstances require, as it does not debilitate the child, nor leave nausea after vomiting. If these remedies be persevered in for a few days, the disease will yield and the patient recover. If the skin be hot and dry at any time, the tepid bath may be used with advantage. The child should lie with its shoulders and head a little elevated.—In this position it breathes easier. Before the child is weaned, the breast milk is the only diet necessary for it. After weaning, the diet should be light and thin. No recovery can be effected until the thymus gland is reduced. Great care should be taken after recovery that the child be not exposed to cold or dampness, otherwise it will relapse. At the same time, pure fresh air without exposure, will confirm the cure.

LOUISVILLE, KY., December, 1852.

ART. II.—*A Case of Stone in the Bladder, at Astoria, Oregon.* By ISRAEL MOSES, M. D., Surgeon, U. S. A.

George Washington, a colored man, aged about thirty-three years, born in Virginia, and brought up in Missouri, applied to me for medical advice, February 15, 1851 at Astoria, Oregon Territory, and gave the following account of himself: From his earliest recollections he has been

troubled with symptoms of urinary disease, and has been told by his friends that they began to show themselves at two years of age. He suffered at intervals with acute stinging pain, running from the neck of the bladder to the head of the penis, his water being, at these times, of a greenish yellow tinge, and feeling, as it passed from him, as if mixed with sand; but he never could see any, and had no opportunity of examining satisfactorily, from the fact of making water out of doors. During the paroxysms "a sudden motion of the leg would relieve him by shoving something back." During the intervals he enjoyed good health, and was able to work as well as anybody. At the age of twenty-one he was attacked with severe pain about the neck of the bladder with a sensation of something rough, running backward and forward along the urethra, which continued ten days, and was relieved by parsley and water-melon seed tea. From this time he continued well, and was able to work as a field-hand, and thought himself entirely well until about two years ago, "when he had a bad spell," which lasted sixteen or eighteen days.

He started for Oregon on the 6th of May, 1850, walked and drove a team nearly all the way, (upwards of two thousand miles!) arrived on the 30th of August, and continued well a month, when the former symptoms returned; but he worked until the middle of October, when he was obliged to give up. He was also attacked with diarrhea, which continued until the latter part of January. During these *paroxysms*, after passing a little urine, the stream would suddenly stop, and he felt a desire to strain, "but this only made the matter worse, and he was obliged to ease off," so as to evacuate the bladder by drops. He has never been examined by any surgeon, but various physicians have told him, "it could not be stone on account of its coming on him at so early an age." He is now in good general health, complaining only of a ten-

dency to diarrhea. Upon examination with a steel sound, I soon confirmed the diagnosis formed from the rational symptoms: the instrument struck a stone as soon as it reached the bladder. I placed him in my hospital upon a preparatory course for lithotomy.

March 10. Has been very quiet since his entrance (on the first,) with little or no pain, until yesterday, when he had a paroxysm of suffering. His diet has been rice, tea, toast, &c; his bowels kept regular; has slept well, but been obliged to get up two or three times during the night to pass his water. To-day he has a great deal of pain at the neck of the bladder and end of the penis. Directed flaxseed tea, and two grains of opium three times a day.

16th. The patient's general health is excellent; but he has suffered for two or three days from increased pain, and I find him this morning walking up and down the ward with his penis in hands, in great agony. Having obtained a case of instruments only the day before, I appointed 1 o'clock, P. M., for the operation, and directed an enema to be administered, which operated freely before the time.

With the assistance of Dr. Tranchard, Lieut. Talbot, U. S. A., and George Gibbs, Esq, I proceeded to operate. Having placed the man in the usual position, and introduced the grooved staff, which was accomplished with difficulty from the restlessness of the patient, and his endeavors to free himself from his bonds. I had provided chloroform, and began to administer it as I introduced the sound, but it was some minutes before he was fully under its influence. Having struck the stone, so as to convince every one of its presence, I made the external (bilateral) incision, at which he wriggled a little, but soon became perfectly quiet, and I cut down to the staff and into the bladder, using a probe-pointed straight bistoury. Introducing my fore-finger and the

forceps, grasped the stone, which proved to be much larger than I had anticipated. After working gently, I increased the extractive efforts, but found it impossible to bring away the stone without a larger incision. I accordingly withdrew the forceps, and introducing the bistoury along my finger, enlarged the opening in the bladder. Still I found it impossible to extract it. Having seized the stone, however, in a firm grip, and brought it as near the opening as I could, I cautiously nicked away, until I succeeded in its extraction. During the operation, which lasted about ten minutes, the patient remained insensible, occasionally making an effort to free himself, but again becoming perfectly quiet. Dr. Tranchard continued to administer chloroform, and to watch his pulse during the operation. The other gentlemen afforded me their useful assistance.

About ℥xx blood were lost from the division of a small artery. His pulse continued full and regular. As soon as the calculus was brought away, the chloroform was discontinued, his face dashed with cold water and aqua amonia held to his nose—he soon revived, began to sob and talk wildly, but soon became quite sensible. A female catheter was introduced into the bladder, through the wound, and twenty drops Magendie's Sol. Morphine administered. I visited him an hour after, and found he had lost ℥ viii or x of blood; he was restless and just seemed conscious that the operation had been performed; he shook hands and thanked me; complained of some pain in his penis. ℞. Repeat the morpine.

At 6 P. M., the bleeding still continued, losing ℥ viii since my last visit; has slept some, and been easy, but begins to be restless; moans and complains of pain in his penis and in his back, from lying in one position. ℞. Sulph. Morphia gr. x. At 7, P. M., free from pain, and has slept considerably; lost about ℥iv of blood, but no oozing now; pulse 80; skin cool and comfortable. 10, P. M.

Has slept most of the time and continues free from pain; some dropping of blood; skin warm and soft; pulse 90, good. Gave 15 drops morphine. A little after midnight, found him dozing and quiet; free from pain; slight oozing of blood, mixed with urine, through the catheter. I directed the Hospital Steward, who sat up with him, to give 10 drops morphine every two hours, so as to keep him fully under its influence.

17th. Found him very comfortable; had passed a good night, and is free from pain; no bleeding; urine flowing constantly through the catheter. I had him washed and dressed, and put in a comfortable bed. He tells me that he was *perfectly unconscious* of what was going on during the operation; he was sensible of the sound being passed into the bladder and striking the stone, but felt no pain afterwards, though 'he seemed to be in a kind of misery,' as he expresses himself, during the time he was under the influence of the anæsthetic.

18th. Slept well during the early part of the night; took 20 drops of morphine, which composed him, though he says he did not sleep much. Complains only of pain in his back and side; tongue clean and moist; skin cool; pulse 72, natural; passed some water through his penis this morning.

19th. Doing well; not a bad symptom, and no complaint of any pain; the wound looks healthy, and is filling up. I removed the catheter.

20th. Complains of pain along his right thigh and leg; general condition good; has some uneasiness in his bowels, not having had any dejection since the operation; skin warm; pulse 100; has passed some urine through the penis, but mostly from the wound. ℞. Castor Oil, with peppermint water.

21st. Complained last evening with pain and uneasiness about the bowels, and some tenderness on pressure. As the oil had not operated I repeated the dose, which ope-

rated three times, and he slept well during the remainder of the night. This morning he is groaning a good deal and complaining of pain in his right hip and leg. Has passed no urine per urethra. I introduced a gum elastic catheter, but it did not enter the bladder, the passage appearing to be plugged up by coagulated blood and lymph, which filled the eye of the catheter; his general condition is excellent; the wound looks healthy, and is almost closed.

22d. Complained yesterday of a severe headache, and about half-past five P. M., was seized with a severe rigor; during which, however, his skin was comfortably warm and perspiring; pulse 100, rather small, followed by hot and dry skin, frequent pulse, coated and sticky tongue. At the onset of the chill, he took 20 drops morphine. During the day he passed his water freely through the penis, in a stream. ℞. Pil Mass. Hydrarg., gr. x, at night.

23d. Is quite comfortable this morning; took castor oil, ℥ss, which operated twice or three times; is free from pain; has passed very little urine per urethra; introduced a catheter and drew off ℥viii, with a good deal of pus mixed with it. Complains of some pain in his right iliac region; no tenderness on pressure; pulse 84, natural; tongue clean and moist; wound healthy in appearance.

26th. Has gone on improving steadily, passed nearly all his urine by the penis, and is generally in most excellent condition. On the last day of the month, I discharged him perfectly well. He had to pass his urine more frequently than one in health, but the bladder was fully under his control.

The stone weighed five hundred and nine grains; an inch and a half in its longest diameter, nearly cubical, with rounded angles; surface rough, with mammillary projections, and studded with fine semi-transparent crysals of oxalate of lime; the projections composed of con-

centric coats of light greenish ox. lime and ox. iron (? the latter appearing in brown highly polished incrustations, which show themselves when the greyish coat is denuded.

ART. III.—*A Case of Hematemesis.* By DR. G. M. BENNET, of Smithsville, Indiana.

A. M., aged 52 years, living in a malarious region, temperate, a laborer, who had previously enjoyed good health, was seized with a chill on the 6th of October, after a few days of indisposition. I saw him in the fever which succeeded, but did not prescribe for him, as it was his wish to treat his own case. He took some purgative pills of a drastic nature, and a little quinine, eating during the day a piece of pickled cucumber. Soon after the pills began to operate he was attacked with nausea and vomiting, and it was at once perceived that he was throwing up blood from his stomach. Blood also passed from his bowels.

Oct. 7th. About 3 o'clock, P. M., I saw him, when he was in the following condition: He was vomiting blood at intervals of fifteen minutes, and passing it from his bowels; great thirst; tenderness in the epigastrium; extremities cold; breathing laborious or gasping; pulse scarcely perceptible at the wrist; extreme restlessness. I prescribed cold drinks instead of the hot stimulants that had been given; cupped freely over the stomach, and followed the cupping with fomentations; and used sinapisms to the extremities. Still the paroxysms of nausea and vomiting continued to recur at short intervals, during which large quantities of blood were evacuated upwards and downwards. The blood discharged in vomiting was of the bright arterial hue; that from the bowels was less florid. The vomiting afforded only partial relief to the nausea, and the stomach continued to be oppressed.

Under these circumstances, I determined to try the effects of an emetic, and accordingly administered a full dose of ipecacuanha in a glass of cold water.

Under the operation of the emetic his pulse rose and the symptoms all improved. I gave him then two grains of the acetate of lead, and half a grain of sulphate of morphia.

In a short time the symptoms were as alarming as ever, and I resolved to repeat the emetic, encouraged by its good effects in the first instance. The effect was decided. His pulse rose, and the patient felt so much relieved that he began to speak of recovering. The lead and morphia were again given, and after a few hours the emetic was given the third time.

No hematemesis occurred after the last emetic, and his circulation became good. I gave him then a dose of calomel combined with morphia, which acted well on his bowels, bringing away large quantities of feces stained with blood.

8th. Patient remained comfortable till evening, when the nausea and sense of sinking returned; his extremities again grew cold, and he complained of tenderness in the abdomen, in the region of the descending colon; cups and fomentations were applied over the seat of abdominal tenderness, sinapisms and frictions to his extremities. The stomach again grew excessively irritable, and everything taken into the stomach was quickly rejected. Opiates, stimulants, and astringents were administered with only very slight advantage.

9th. The same state of things as that which prevailed yesterday still continues. The paroxysms of vomiting return hourly, or oftener; his thirst is very great, and his bowels are moved as often as he vomits; extreme restlessness, with suffocative breathing; the matter from his bowels has the appearance of dirty water, almost destitute of feculent matter. As the only thing that seemed

to benefit the patient at all was the emetic, I determined to have recourse to it once more, and accordingly administered a dose of ipecac. in a little warm water.

The first influence of the emetic was alarming—he seemed to sink under its action; but reaction soon came on, and for some hours the patient was more comfortable. At the end of this time the spontaneous vomiting returned, with the serous purging; his extremities grew cold as high as the elbows and knees, and he was pulseless at the wrists. Wine and opium were freely given, and friction of the extremities was vigorously employed. Applied a blister to the epigastrium.

10th. Patient a little better. Blister has drawn well. The symptoms of yesterday persist, but in a mitigated degree. His stomach will retain nothing but the wine and opium, which are freely given. The opium does not narcotize him. Appearance of the patient much that of a man in the collapse of cholera.

Evening. A change is observable in the character of the alvine dejections, which are slightly feculent, with a tinge of bile, as if the calomel which I gave the day before, and supposed he had thrown up, might be producing some effect. Wine and opium to be continued.

11th. Patient better; stomach more tranquil, discharges from bowels still not satisfactory. Ordered a full dose of calomel and morphia.

The operation of the calomel was good, and the discharges favorable. His kidneys also began to act; his circulation was improved and nearly natural, except when affected by nausea. Stomach will retain no nourishment; little appetite; much thirst. Continue the stimulants and the opiate.

12th. Bowels have been quiet for some hours, and the patient is more comfortable. To-day he has some fever. This fever continued for a few days, being of a typhoid type; but it was not obstinate, and the patient went on improving, and is now well.

I am not sure that I understand the character of this case, but suppose that the affection was of malarious origin. The subject had suffered with chills, and his disease was probably a masked intermittent—one of the *febres intermittentes sub forma larvata*, of the old writers. A congestion of the portal circle induced by the malarial poison might naturally find vent in hemorrhage from the stomach.

I am the more inclined to this view of the subject from the fact that I have heard of the occurrence of a case similar to the foregoing in the practice of a medical friend. This patient was also a resident of a malarious district, and had been affected with the symptoms of an obscure intermittent. The quantity of blood discharged by emesis was very great—a chamber-pot was nearly filled, and the bed-clothing was saturated with blood. The hemorrhage recurred three or four times, at intervals of two, four, and six days, prostrating the patient to the last degree. He however recovered.

It is true that these cases, if cases of "intermittent fever," were very obscure, but they seem to me to bear more of that character than any other.

October 25, 1852.

SELECTIONS

FROM

FOREIGN AND HOME MEDICAL JOURNALS.

On Variations of Pitch in Percussion and Respiratory Sounds, and their application to Physical Diagnosis. By AUSTIN FLINT, M. D., of Buffalo, New York.—Very litttle attention has hitherto been paid to variations in the pitch of sounds heard in the practice of percussion and pulmonary auscultation. The sibilant and sonorous râles of bronchitis, it is true, are distinguished from each other chiefly by a contrast in pitch, but, as respects the remainder of the physical signs pertaining to pulmonary disease, they appear not to have been much studied in this aspect, and even the facts that have arrested notice do not seem to have been applied, save in a very limited degree, to physical diagnosis. By most writers on physical exploration, pitch modifications, except* in the sibilant and sonorous râles, are not recognized, no allusion whatever being made to them. In the second edition of the able and comprehensive work of Dr. Walshe, of London, recently republished in this country, the subject is noticed more distinctly than by any other author with whose writings I am acquainted. Dr. Walshe enumerates among the elements involved in the different modifications

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* The vocal sign *aegophony* should perhaps also be excepted.

of respiratory sounds in health and disease, variations in pitch; he also mentions several important facts with respect to these variations. But he apparently loses sight of their practical applications, making no reference to them in connection with the diagnosis of individual thoracic diseases. Barth and Roger state, as briefly as possible, the fact that the bronchial respiration is higher in pitch than the cavernous. But, in general, as just remarked, nothing is to be found relating to this subject in standard treatises* on percussion and auscultation.

What facts are disclosed by the study of percussion and respiratory sounds, in health and disease, with reference to variations and pitch? How far are these facts available in diagnosis? The latter question is much the more important of the two; or, rather, the importance of the first question depends mainly upon that which belongs to the second. The subject of physical exploration has already suffered from over refinement. To be practically available in the hands of all intelligent practitioners, the art must be simplified as much as possible. New distinctions, unless obviously tending to enlarge or facilitate our means of diagnosis by physical signs, were they not only true, but ever so interesting to those whose attention is specially directed to this department of medicine, would be of questionable utility, so far as they serve to render the pursuit more complicated and difficult. In proposing, therefore, to submit the results of my observations and experience, thus far, in answer to the foregoing inquiries, I am influenced by the belief that, considered in this point of view, the physical signs of pulmonary affections admit of being enlarged in their application to diagnosis, and rendered more readily available for practical purposes. A single additional remark by way of introduction; the

* In connection with this statement, it is proper to give the bibliography to which it applies. The works consulted are as follows:—

Laennec, edited by Forbes; Walshe on the Heart and Lungs; Hughes's Physical Diagnosis of the Lungs and Heart; Barth and Roger's Practical Treatise on Auscultation; Gerhard on Disease of the Chest; Prize Dissertations on Physical Exploration, by Drs. Holmes, Bell, and Haxall; Blackiston on Diseases of the Chest; Latham on Auscultation and Semeiology; Swett on Diseases of the Chest, edition of 1852; Bowditch's Young Stethoscopist; Lawson's Lectures, in the Western Lancet.

pitch modifications of sound, as before intimated, opening a field of study in physical exploration as yet but little cultivated, and to which, so far as relates especially to auscultation, my attention has but recently been directed, propriety and prudence dictate, not only caution in making deductions from a number of data somewhat limited, but a certain amount of distrust in a kind of observation in which the liability to error cannot be at once fully estimated. In view of these considerations, the conclusions which I shall present are advanced as propositions to be confirmed by further researches, the object of this paper being, in a great measure, to invite the investigations of others in the same direction.

The subject naturally resolves itself into the study of—First, *percussion* sounds; and, second, the pulmonary sounds disclosed by *auscultation.*

Section 1. *On attention to Pitch of Sound in the practice of Percussion.*—It is hardly necessary to gather recorded data with reference to the variations of pitch of *percussion* sounds, since observations can be so easily made, and repeated, to any extent, by every one. I shall therefore give my experience under this head briefly, and in a general way, *i. e.* without citing particular cases. The use of the term *pitch*, as applied to percussion sounds, may be questioned, and questionable. Whether it be correctly applicable, in a musical sense, to these sounds, or to those of auscultation, I shall not stop to inquire. It suffices if the idea it conveys be intelligible, and if it denote an appreciable distinction. A percussion sound elicited from the chest, if not entirely flat, has a certain amount of resonance. This resonance may differ in degree; in other words, the sound is more or less clear or dull. A peculiar quality of tone arises from the fact that the chest contains air in vesicles, and hence the sound may be distinguished as the *vesicular resonance.* Percussion sounds present occasionally, deviations from this vesicular quality; an example the most familiar being the change occasioned by the presence of air between the pleural surfaces, or in a large excavation, constituting what is known as tympanitic resonance. Now, in addition to these classes of variations, the resonance on per-

cussion in different parts of the chest, in morbid conditions, present a disparity analogous to, if not identical with that which constitutes the distinction called *high* or *low* in comparing musical tones—in other words, a disparity in pitch. This kind of disparity is recognized by directing attention to, and comparing the sounds elicited from different regions, just as is done with reference to musical notes, in determining whether they are relatively higher or lower in key. The faculty of distinguishing musical discords, in other words a musical ear as it is called, doubtless assists this discrimination, and it is probably true that the ability to detect a slight variation will correspond with the delicacy with which deviations from the harmony of musical tones are appreciated.

What pathological significance belongs to the fact of a variation in the pitch of resonance? The practical importance of the subject depends, of course, on the answer to this question. The question leads to the enunciation of the following law: An elevation of pitch always accompanies diminution of resonance in consequence of pulmonary consolidation. In other words, dullness of resonance is never present without the pitch being raised. This proposition is to be verified by observations which may be readily made. Cases of tuberculous deposit, with marked disparity of resonance at the summit of the chest on one side will furnish examples, and such cases are sufficiently numerous. But the law may be tested in the healthy subject. The præcordial region presents well-marked dullness compared with the corresponding region on the right side. The percussion sound in the former situation will answer as a type of resonance, modified by an increased proportion of solid material incident to tuberculous or other disease

A practical advantage of attention to pitch, in employing percussion, consists, thus, in its confirming the existence of dullness. It furnishes additional evidence thereof, and adds positiveness to the conclusion, when the diminution of resonance might not be with certainty determinable. To the musical ear, more especially if skilled in discriminating musical tones, a disparity in pitch is more quickly as well as more clearly distinguished. It is far easier to appreciate a contrast in this point of view, than to determine a slight or moderate preponder-

ance of resonance in the percussion sound on one side of the chest. I have frequently illustrated this in teaching physical exploration. A person just essaying to distinguish relative dullness of resonance on percussion, often fails in its recognition, even when it is pretty strongly marked. He is unable to perceive a difference which is sufficiently apparent to the practical percussor. Under these circumstances I have frequently inquired if the learner were able to sing, or play on any musical instrument. If he replied in the affirmative, I requested him to compare the sounds on the two sides of the chest, as if they were musical notes, with reference to pitch, and the disparity then became immediately manifest. If I am misled with respect to the assistance to be derived in this way, by the results of my own experience, the error involves a kind of self deception which it is very easy to impart, for many to whom I have pointed out this method of determining dullness, have assured me that they have found it of great utility in practice. By directing attention to the pitch, an intelligent student, with some musical powers and cultivation, will become an expert in appreciating a slight dullness sooner than he can attain to proficiency in the manipulating tact of percussion.

Another practical advantage, certainly equal to, if not greater than the foregoing, is derived from the fact that a distinct disparity of pitch may be apparent, in some instances, when a disparity in the amount of resonance is inappreciable. The correctness of this statement my observations lead me not to doubt. Others, however, are to be satisfied by the evidence of their own perceptions. This fact is stated by Dr. Bowditch in his work entitled the *Young Stethoscopist*, and I do not recollect meeting with a similar statement by any other writer. He says, "A *difference of note or of pitch* between two corresponding parts is not uncommon, when there is no real flatness in either. It occurs in cases in which the lung is not by any means impervious to air. Sometimes in the early stages of phthisis and in pneumonia in its early or latest stages;" (page 60, second edition.) In another place he remarks: "Any degree of dullness, even the slightest *difference of note or of pitch, if confined to the upper part* of the chest, between the portions equi-

distant from the spine or sternum, augments my suspicion of the existence of tubercles;" (page 88, ibid.) To measure the exact amount of mere resonance, so as to make an accurate comparison of two sounds that differ but slightly in this respect, it must be evident on a little reflection, is not easy. The truth probably is that the difference in pitch is perceived when a slight disparity exists which is ordinarily called dullness. And this leads me here to remark, it is not to be supposed that practical chest explorers have not been accustomed to be guided by pitch modifications of sound. Variations in this respect have been perceived without recognition, if this antithesis be allowable. The disparity has been apparent, but attributed solely to diminished resonance or dullness. This remark will be found to apply equally to respiratory or to percussion sounds. This, however, does not prove that the practice of physical exploration will not be materially aided by directing the attention to the variations in pitch *as such*.

A contrast in percussion sounds in many of the diseases of the chest is sufficiently obvious, requiring no special delicacy of discrimination. This is the case in pleuritis with effusion, in the second stage of pneumonitis, and in phthisis when the tubercelous deposit is abundant. Attention to pitch, under these circumstances, may be said, with truth, not to be of importance. A flat, and notably dull sound are readily enough discovered. It is in connection with the diagnosis of the early stage of tuberculosis that the point under consideration is particularly important. Of the importance of the diagnosis of the disease in this stage it is not necessary to speak. In view of the employment of means to arrest the further progress of tuberculization, and the fair prospect, in many instances, of effecting that object, there is perhaps no end in practical medicine more desirable than to determine positively the presence of tubercle before the disease has made much progress. Any addition to our means of giving precision to the diagnosis of incipient phthisis is a valuable contribution, not only to our science, but to our art, inasmuch as the prospect of saving or prolonging life is greater in proportion as the affection is earlier recognized.

A disparity at the summit of the chest, however slight

is a sign to which great weight should be attached in deciding on the presence of tubercle. Practical auscultators generally will concur in the statement above quoted from the treatise by Dr. Bowditch, relative to this point. If, therefore, by attention to the pitch of resonance, we are better able to appreciate a slight shade of difference, or to recognize its existence with greater certainty, there can be no question concerning the service thereby rendered to physical exploration.

It is hardly necessary to say, that the usefulness of the means of early diagnosis in phthisis is to be regarded in both a positive and negative aspect. In other words, it is quite as important to be able to exclude tuberculosis, by the absence of physical signs, as to determine its existence by the presence of these signs, and, hence, improvements in physical exploration have practical relations of equal value, in either direction.

Another advantage to be derived from attention to pitch consists in the facility of developing a disparity in situations in which but little resonance can be elicited, owing to the intervention of bone, muscle, and fat between the integument and walls of the chest. A late writer on diseases of the chest says, that the mammary region in females "is of no value in percussion."* The same author farther states that, "posteriorly, no advantages can be derived from percussion; the muscles are too thick about the shoulders to admit of a decided advantage even in cases in which the pulmonary condensation is much greater than in incipient phthisis." These statements are to me surprising. A disparity of pitch is frequently very apparent in the scapular region, both above and below the spine, in cases of tuberculosis, and I have met with it here when it was not marked in the infra-clavicular region. I have demonstrated this fact repeatedly during the short period that has elapsed since the publication of the work from which the above extracts are taken. To dispense with the information from percussion sounds over the scapulæ would considerably impair the diagnostic resources in incipient phthisis. The thickness of the muscular coating in other parts of the chest, and even the

* A Treatise on Diseases of the Chest, by John A. Swett, M. D., 1852, pp. 17 and 258.

mamma of the female, do not prevent a comparison of sounds with reference to pitch; but, for reasons obvious enough to the pathologist, the comparison in these situations is less important in diognosis, save in diseases in which the coarsest exploration would suffice to develop flatness, as in pneumonitis and pleurisy.

Another advantage relates to the diagnosis of heart diseases. Percussing from the clavicle, the acromial angle, and the axilla, in a direction toward the site of the heart, the points at which there is a distinct modification of pitch will mark the limits of the organ in these directions, while the point of impulse, if perceptible, will give the lower boundary. This method, thus, will be found useful in determining the degree of enlargement in hypertrophy and dilatation, and the amount of effusion in pericarditis.

The significance of variations in pitch, as of other points of disparity, in the diagnosis of thoracic diseases, of course, is predicated on the equality of both sides of the chest, in this respect, in health. Does this equality exist? I cannot answer this question quite so explicitly as I could desire. Pitch modifications will necessarily result from causes which at the same time occasion obvious dullness, such as spinal curvatures, former pleurisies, arrested tuberculous deposit, &c. These causes, and others, moreover, may occasion, in some instances, a disparity in pitch, when the changes are not sufficient to produce obvious dullness. Comparison in pitch affording a more delicate means of discovering a slight deviation from the symmetry of the two sides, it is not improbable that healthy chests may be less uniformly equal in this particular, than with respect to a marked diminution of resonance on one side. The examination of a large number of individuals presumed to be free from pulmonary disease would alone afford the data for answering the above question positively. I have frequently examined chests, at the summit more particularly, with reference to this point, but without recording the results. Within a few days I have noted observations in twenty-two persons. In all save *three*, the pitch was equal in the infraclavicular region, to which attention was more particularly directed. In *one*, there was elevation of pitch on the right side, apparently owing to the greater develop-

ment of the muscles on this side. In another, the same disparity existed, the same explanation not being so obvious. There was no reason to suspect disease of the lungs in this latter instance. The patient was a young female in perfect health. In the third instance the percussion sounds were clear and equal at the summit anteriorly, but over the right scapula there existed evident dullness compared with the sound over the left scapula. This person was a mechanic, and the muscular mass in the interscapular space was notably thicker on the right side. It is undoubtedly desirable that examinations of this kind should be multiplied.

In practicing percussion with a view to *pitch*, observance of the rules which are familiar to every practical auscultator is peculiarly important; I allude to the position of the patient, care to strike successively on the two sides at corresponding points, and with an equal force, &c. Tact in eliciting a loud distinct sound is desirable. A smart stroke is frequently more effective for this object than a light feeble blow, not, however, using sufficient force to occasion pain. The only pleximeter and precussor with which I have any practical acquaintance are the fingers. It has often occured to me that other instruments might in some instances be more satisfactory, but I have nothing to say on this topic from my own experience.

Section 2. *On attention to the pitch of sound in the practice of auscultation.*—My attention has been directed to the variations in the pitch of respiratory sounds more recently, than to those belonging to percussion.—It is for a few months only that I have made the former objects of study During this time, as leisure and opportunities have permitted, I have been accustomed to note observations on the different cases of thoracic diseases coming under my notice; and the views which I shall submit in this section will consist of deductions from the data thus collected. Considering the novelty of the subject, as well as its importance, I have thought it best to present, not only the conclusions based on what data I have gathered, but a transcript of the data themselves. As an appendix to this section, therefore, I shall give a brief synopsis of the observations which have been made in cases of disease, amounting to over forty in

number. A larger collection of data for generalization is undoubtedly to be desired; but it is to be borne in mind that the aim of this memoir is by no means to exhaust, but rather to open the subject, as one claiming attention, with a view to its practical application to physical diagnosis. I would here repeat that what I shall advance as the results of observations made up to this time, I wish to be considered in the light of propositions to be confirmed, enlarged, and perhaps corrected by continued investigations. As already intimated, to be able to estimate fully the liability to error of observation in a new field of study like this, may require the fruits of a longer experience. I am led to make this remark the more, in consequence of being sensible that a facility in distinguishing pitch variations in the respiratory sounds is much increased by practice. After what I have said, it is but justice to myself to add that, in making the observations I have noted, I have spared no effort to render them reliable.

The point of departure for the study of pitch modifications, as of other physical signs of disease, is the examination of the chest in health. The first inquiry, therefore, in presenting this branch of the subject, will be, *what variations in pitch belong to healthy respiration?* To this question I will devote a distinct division of s section.

Variations in the Pitch of Sounds in Healthy Respiration.—With a view to the study of the variations to be found in a healthy chest, I have noted the results of physical explorations, more or less complete, of twenty-seven individuals, presumed to be entirely free from any thoracic disease. This number of observations, although too few to settle the numerical ratio of the occurrence of particular phenomena, will probably suffice for the present object, which is merely to determine some general principles to serve as the basis of the study of morbid deviations.

Of these twenty-seven individuals twenty-one were males, and six females. The ages were various, all, with a single exception, being above childhood, and none being advanced in life. The majority were young persons from twenty to thirty years of age.

The normal respiratory sounds are resolvable into three divisions, according to the parts of pulmonary apparatus, whence they emanate, viz: the trachea, the bronchi, and the vesicles. Named from these their anatomical relations, they are the *tracheal*, the *bronchial*, and the *vesicular*. The character of pitch belonging to the sounds produced in these three situations may be considered under three distinct heads.

1. *Tracheal Sounds.*—On placing the stethoscope over the trachea, the respiratory sounds are found to be notably high in pitch. The development, that is to say the loudness of the sounds, in ordinary respiration, varies considerably in different persons. In some persons they are quite intense, in others feeble, and even indistinct until the persons are requested to breathe forcibly, when they become much increased. The relative altitude of pitch is immediately perceived on comparing the tracheal sounds with the vesicular respiration heard on listening over the chest. Two sounds are heard uniformly in this situation, viz: the sounds of inspiration and expiration. An interval occurs between these two sounds. The inspiratoty is relatively shorter than the expiratory sound. The sound of expiration is higher in pitch than that of inspiration. These results have been uniform in all the observations that I have made.

2. *Bronchial Sounds.*—Explorations for the bronchial respiration were made anteriorly near the clavicula-sternal junction, and, in a smaller portion of the cases, in the interscapular space posteriorly. Of twenty-three examinations in the former of these situations, the bronchial sound was appreciable in twenty, and not discoverable in the remaining three instances. Of fourteen examinations in the latter situation, *i. e.*, the interscapular space, it was appreciable in all but one instance. As respects the two situations, in some cases, the sounds were more developed posteriorly and anteriorly, and in other cases, the reverse. There was considerable difference in different cases in the degree of development, or intensity of the sounds. In several, no sound was discernible during ordinary respiration, but it became apparent on increasing the force and quickness of the respiratory movements.

The pitch of the bronchial sounds is high, probably no much below that of the tracheal sounds, but it did not occur to me to compare the two with reference to pitch, until I began to write on the subject. The point has not much importance. The elevation of the pitch of bronchial, compared with the vesicular murmur, is to be borne in mind. A comparison of the former, as heard in the interscapular space, and near the sternum anteriorly, with the latter as heard over other parts of the chest, showed, in every instance, a distinct and notable disparity.

Other interesting points of distinction pertain to the *bronchial sounds.*

Recollecting the relations, in size and length, of the two primary bronchi to each other, the inquiry arises if the bronchial respiration heard in corresponding situations on both sides of the chest, before and behind, is uniformly equal in intensity and pitch? With respect to intensity or loudness, of *thirteen* examinations it was thought to be somewhat more developed on the left side in four cases, on the right side in five, and in four cases no difference in this particular was apparent. As regards pitch, the result was different. Of twenty examinations the pitch was noted to have been distinctly higher on the right side in fifteen, no difference being appreciable in the remaining five cases. This disparity in pitch between the two sides was not observed in all instances, both anteriorly and posteriorly. Excluding seven instances in which it is merely noted that the pitch was higher on the right side, without specifying whether before or behind, the notations in the remainder of the cases are as follows: 1. No disparity in front, but notably higher on the right side behind. 2. Higher on the right side before and behind. 3. The same. 4 The same. 5. Higher on the right behind, where the bronchial sound is alone heard. 6. Slightly higher on the right side in front, no difference being appreciable behind. 7. Higher on the right side before and behind. 8. The same.

The existence of disparity in the bronchial sounds of the right and left side, attributable to the difference in size and length of the bronchial divisions of the trachea has been pointed out by Dr. Gerhard, of Philadelphia, but the fact has not been recognized by all auscultators. Dr. Stokes, on the contrary, has taught that a disparity fre-

quently exists, but that the bronchial character is apt to be more apparent on the left than on the right side. Dr. Gerhard speaks of the respiration being more blowing or tubular on the right side. If my observations are correct, both Dr. Gerhard and Dr. Stokes may be right, the discrepancy arising from confounding different elements which enter into the bronchial respiration. It is occasionally more developed, that is to say, louder on the left than on the right side. So far Dr. Stokes is correct, but in a very large majority of persons the pitch is higher on the right side, while this relative elevation never obtains on the left; and, as the pitch is one of the most prominent of the elements of the bronchial respiration, the foregoing results accord with the fact pointed out by Dr. Gerhard. The observations of these two distinguished writers are thus apparently not really inconsistent with each other.

In degree, or loudness, the normal bronchial respiration presents in different individuals great variations. In this point of view it has no uniformity. It is never intense, and, in some persons, is quite faint, requiring a forcible respiration to develop it sufficiently to study its characters; and it is not appreciable in all persons.

In a certain proportion of the cases in which the normal bronchial respiration is heard, not uniformly, a sound of expiration is appreciable. Of thirteen instances in which the inspiratory sound was present, a sound of expiration also existed, the latter being absent in four. The facts with respect to these variations contained in the few observations I have noted are as follows: Of the above thirteen instances, in six the sound of expiration was perceived only on the right side, either in front or behind, and in seven it was appreciable behind, and not in front.

The sound of expiration appeared to be higher in pitch than the sound of inspiration, in every instance in which attention was directed to this point. This fact is noted in nine observations, an exception thereto not being noted in any. Thus, in this trait, the normal bronchial respiration resembles the tracheal.

In every instance in which attention was directed to the succession of the sounds of inspiration and expiration, an interval between was observed. This feature belongs to the bronchial, in common with the tracheal respiration.

It will thus be noticed that, in the more important of the elements of the tracheal and bronchial sounds, they are similar. They both want a distinctive quality which will be seen to characterize the vesicular respiration. They are both high in pitch, in this respect probably not differing much from each other. The inspiratory sound in both is short. The expiration in each is higher in pitch than the inspiration; the difference with respect to this point between the tracheal and the bronchial respiration, being that in the latter an expiratory sound is heard in a certain proportion of cases only, while it is uniformly heard in the former. In each, an interval occurs between the sounds of inspiration and expiration. The characters distinguishing the two kinds of respiration consist in the greater intensity of the tracheal sounds, the uniformity with which they are heard in different persons, and the constant presence of an expiratory sound.

3. *Vesicular Respiration.*—The vesicular respiration, as is well known, differs from the tracheal and bronchial in having a peculiar quality, not capable of being very definitely expressed by language, but which is readily enough appreciated by the practiced ear. The terms *breezy* and *expansive*, perhaps, approach as near a definition as can be done by words. This quality of sound is *sui generis*, and familiarity with it is very necessary to the practical auscultator. The peculiarity alluded to may be characterized as, *par excellence*, the *vesicular quality*. I shall have occasion to refer to it hereafter by this title.

In what other particulars does the vesicular respiration differ from the two varieties already noticed?

The difference in pitch is striking. The pitch is uniformly and notably lower than that of the tracheal or bronchial respiration. This was true of all the cases examined with reference to healthy variations. As a point of difference, it is one to which, in connection with the subject of this memoir, special attention is desired.

An expiratory sound is appreciable in a less number of instances than is the case with the bronchial respiration. Of nineteen examinations with reference to this point, the expiration was heard in nine. The pitch of the expiratory sound, when it is heard, compared with that of the inspiration, is another point of special interest in the

present inquiries. Of eight observations in which the facts relating to this comparison were noted, the pitch of the expiration was lower in all but two instances. In these two instances, the pitch of expiration was higher in the right infra-clavicular region towards the sternum, no expiratory sound being appreciable, in either instance, except in the situation first mentioned. So far as these examinations go, then, the rule is, that the sound of expiration in vesicular respiration is lower in pitch than the sound of inspiration, with occasional exceptions* at the summit of the chest on the right side towards the sternum. This rule, without the exceptions, is stated by Dr. Walshe in the last edition of his work on the heart and lungs.

Aside from the foregoing differances, the duration of the inspiratory sound, in the vesicular respiration, is longer than in the tracheal or bronchial. The expiratory sound, on the other hand, is as notably shorter; and when a sound of expiration is appreciable, it is nearly or quite continuous with the sound of inspiration. The latter statement I give on the authority of others, and my own unrecorded experience, not having taken pains to note the facts relating to the point in healthy observations made with reference to the subject under consideration.† There are some other variatians in pitch which are of practical interest. The pitch of vesicular respiration at the upper part of the chest is higher than at the lower. This I have noted in eleven observations, which were all that have been made relative to this point. The pitch does not appear to be sensibly raised by increasing the force of the respiratory movements. It seems to remain the same in ordinary and forced respiration. This I have noted in eight observations, being all that were made relative to

* The sound of expiration is oftener heard when the vesicular sounds are exaggerated in supplementary respiration. In the clinical observations of cases of pneumonitis, the presence of a sound of expiration on the healthy side, and the lowness of pitch compared with the sound of inspiration, are noted in several instances. See Appendix First Series. Cases of Pneumonitis.

† The continuousness of the expiration with the inspiration is noted in several of the clinical observations, in which the lungs on one side were free from disease. See Appendix, First Series. Cases of Pneumonitis.

the point The vesicular respiration has a sensibly higher pitch at the summit of the right than of the left chest, in a large proportion of individuals. Of fifteen examinations relative to this point, the disparity just noted was found to be more or less marked in eleven instances, no difference between the two sides being apparent in the remaining four. The practical bearing of the several facts stated in this paragraph on physical exploration in disease will be at once obvious.

In conclusion, while the tracheal and bronchial sounds were found to be essentially the same in character, the circumstances distinguishing each from the other being rather incidental than intrinsic, the vesicular respiration, on the other hand, contrasted with the two former, exhibits some striking points of dissimilarity. It has that inexpressible peculiarity distinguished as the vesicular quality. The inspiratory sound is lower in pitch. The expiratory sound, when heard, save in a limited situation, is lower than the sound of inspiration, the reverse of this being true of the tracheal and bronchial sounds. Distinctive features less prominent, but important, are the greater length of the inspiratory sound, the shortness of the sound of expiration, the continuity of these two sounds, and the fact that in a large proportion of cases the sound of inspiration alone is appreciable.

Variations of Pitch in Respiratory Sounds in cases of Disease.—In treating of morbid variations, it will be most convenient to consider, under separate heads, the different diseases in which they have been studied. The divisions will then correspond with those of the clinical observations given in the Appendix to this memoir.

Pneumonitis.—The present inquiry respecting pitch variations of sound has no reference to râles. The crepitant râle in the first stage of pneumonitis frequently drowns other sounds. The modifications which relate to the present subject are incident to the solidification belonging to the second stage of the disease. More or less crepitation, as is well known, may continue into this stage, being heard at the end of the inspiratory act. Under these circumstances, enough of the respiratory sound may be heard, before it is lost in the crepitation, for the pitch to be compared with that of the respiratory sound on the healthy side.

The observations pertaining to pneumonitis, among those which I have collected, amount to *twelve*. This number might have been increased since my attention has been directed to this subject, but it is probably sufficient for the present object. In each of these observations, the pitch of respiration was notably high, presenting a striking contrast, in this respect, with the respiration on the healthy side. The disparity, as I have noted in one of the observations, is sometimes as obvious as between a fife and German flute. Of these *twelve* observations, an expiratory sound was more or less developed in *eight* instances. In *two*, a sound of expiration was not appreciable; in *one* instance, it was appreciable, but too feeble for its characters to be studied, and in *one* instance the fact as to the presence or absence of the expiratory sound is not noted. The pitch of the sound of expiration was higher than that of inspiration in every instance in which attention was directed to this point, save *one*. In the excepted instance, the observation was made in an early stage of the disease; the crepitant râle persisting, the expiratory sound was feeble, and the fact of its being lower is stated somewhat distrustfully. The expression is, it appears to be lower in pitch. The correctness of this observation seems to me open to doubt, for, as I have had occasion to notice, there is a liability to err in estimating the pitch of a faint sound of respiration. Its feebleness may, without due attention, give rise to the impression that it is lower in pitch. With this doubtful exception, the elevation of the pitch of expiration over that of inspiration was uniform, wherever the expiratory sound was sufficiently appreciable to study its characters.

Aside from what relates to the above pitch modifications, the facts noted with respect to other characters are as follows: The inspiration was shortened in every instance in which attention was directed to this point. This is noted in *five* observations. An interval was observable between the sounds of inspiration and expiration in all the observations containing information on this point: viz., in *six*. The expiration was prolonged whenever attention was directed to this point. It is noted in *five* observations.

The characters, then, belonging to the respiratory sounds incident to pulmonary solidification in pneumonitis, are, elevation of the pitch of both inspiration and expi-

ration; a higher pitch of expiration than of inspiration, whenever the former is heard, almost if not quite uniformly; a shortened inspiratory sound; a prolonged sound of expiration; and an interval between the sounds of inspiration and expiration.

The respiration in the second stage of pneumonitis, as is well known is sometimes characterized as *tubular*, and sometimes as *bronchial*. As contrasted with the vesicular respiration, the first term is certainly significant. The sound may also, with great propriety, be called bronchial, for, on comparing the several points just mentioned with the different elements entering into the normal tracheal and bronchial sounds, more especially the latter, it is perceived that they are essentially identical. The bronchial respiration in pneumonitis is neither more nor less than the bronchial respiration heard in the healthy chest in certain situations. One of the chief points of difference between the normal bronchial and treacheal sounds, it has been seen, is the greater intensity of the latter. The respiratory sounds in pneumonitis vary considerably, in different cases, in degree. The intensity appears to be a contingent, rather than an intrinsic element. In some instances, the development of sound is fully equal to that heard over the trachea, and it may be even louder than is the treachel respiration in some individuals. This comparison of the respiration in pneumonitis with the tracheal and bronchial sounds would naturally enough lead to inquiries respecting the physical philosophy of the identity in their characters. Such inquiries, however, are entirely foreign to my present purpose. To contrast the respiration of pneumonitis with the normal vesicular murmur would be to repeat the points of difference already noticed in connection with the variations incident to health. The disparity is, of course, based on the same circumstances as that between the tracheal and bronchial, and the vesicular sounds.

Pleuritis.—The observations relating to pleuritis were made but in *three* cases. So far as these cases go, they show that, when considerable effusion exists, the sound over the compressed lung is high in pitch, presenting, also, more or less of the other characters belonging to the bronchial respiration. After the fluid has been removed nearly, or quite, by absorption, more or less pleuritic ad-

hesions limiting the expansibility of the affected side, the respiratory sound, having resumed the vesicular quality, is relatively feeble when compared with the sound on the other side which is exaggerated, but a disparity in pitch may not be appreciable. If, however, the quantity of effusion has been large, so as to have distended greatly the chest, and led to considerable contraction after the absorption is effected, then, in connection with some permanent dullness on percussion over the affected side, the pitch of respiration may be higher than on the other side, although the vesicular quality and other characters of the vesicular respiration are resumed.

For the exemplification of these statements the reader is referred to the Appendix, Second Series of Observations.

Gangrenous Excavation, and pneumothorax with Perforation.—I have had an opportunity of observing, since my attention has been directed to this subject, the respiratory sounds in but one instance of gangrenous excavation, and one of pneumothorax, both occurring in the same case.

Over, or near the site of the gangrenous excavation, which was considerable in size, the sound was noted to be non-vesicular, and low in pitch; as respects the latter, presenting a striking contrast with the sound heard at the summit of the chest, in the same case, where the lung was solidified by compression. Over the latter, the sound was equally non-vesicular, but high in pitch.

The entrance of air into the pleural cavity through a perforation of about the size of a goose-quill occasioned a sound, non-vesicular, and low in pitch.

For a brief account of the case, together with the autopsical appearances, the reader is referred to the Appendix.

Tuberculosis.—The physical signs incident to tuberculosis have relation not merely to the presence of the morbid deposit, but to its amount, and the stage of the affection. The study of the disease, with reference to the principles of diagnosis, thus presents itself under somewhat different aspects. During the past two months, I have recorded observations, with respect to variations in the pitch of respiration, in *twenty-five* cases of tuberculosis. I propose to examine the results of these observations under four heads, conforming to the distribution for

the cases into four groups in the Appendix to this memoir. Following this arrangement, I shall consider, *first*, the observations in cases in which the tuberculous deposit was supposed to be small in amount; *second*, when the quantity of the deposit was comparatively abundant; *third*, when the disease had proceeded to the stage of excavation; and *fourth*, when the affection appeared to have been arrested.

I. *Observations in Cases of Small Tuberculous Deposit.* —*Eleven* of the cases fall under this subdivision. In each of these cases, the pitch of respiration was found to be higher over the site of the tuberculous deposit, as determined by relative dullness on percussion. In order to test the reality of this variation, and ascertain whether the perceptions might not be influenced by preconceptions, in several of the cases included in this and the next subdivision, auscultation with reference to the pitch was practiced prior to percussion, or any other examination of the chest. In every instance, the pitch modification indicated the side on which relative dullness on percussion was afterward found to exist. I have frequently caused this experiment to be made by several young gentlemen, medical students, who have accompanied me in my hospital visits, and with uniform success. That is to say, the difference in the pitch of respiration furnished a ready criterion of the existence, or greater abundance of the deposit on one side, before resorting to percussion or other signs.

In some of the observations, the mere fact of elevation of pitch on one side is stated. I was at first satisfied with simply ascertaining this fact, without attending particularly to the expiration, or other points. In several of the cases, however, the observations were more comprehensive.

It is noted that the sound of expiration was appreciable in *six* cases, and inappreciable in *two;* in *three* of the observations, nothing being stated on this point. The expiration is stated to have been prolonged in *four* cases. In *five* cases, the expiration was thought to be either equal to, or higher in pitch than the inspiration: or, to be exact, in *three* of these five cases it was thought to be higher; in the other *two*, it is stated to have been as high, if not higher.

In some cases the vesicular quality was obviously impaired, in connection with the elevation of pitch; but in other cases, disparity in this respect was not obvious. So, with regard to development or intensity of sound, it was sometimes diminished, but not invariably.

To determine the presence of a small amount of tuberculous deposit, in other words, the diagnosis of incipient phthisis, is frequently one of the most difficult problems in practical medicine. Certainly, the employment of physical exploration with reference to this point requires as much accuracy, care and skill as in any of its applications. Several of the auscultatory signs which have more or less importance as indicating the presence of tubercle, are only occasionally present, and the evidence furnished by them is circumstantial, rather than positive. This remark applies to the signs denoting circumscribed bronchitis, pneumonitis, or pleurisy, in proximity to the morbid deposit; the sibilant or mucous râles at the summit of the chest; the crepitant râle, or friction sound, heard in the same situation. Other signs which are doubtless of importance in this connection, must be regarded as somewhat equivocal, such as the jerking respiration, and a prolonged expiration. The most direct and constant of the signs incident to a small tuberculous deposit is the modification known as the *rude*, sometimes called the *harsh* or *rough* respiration. This modification has relation to the present subject, while, to consider the other signs referred to, in this connection, would be irrelevant.

For the novice in the study and practice of physical exploration, the *rude* respiration is generally, of all the signs, the one most difficult to be apprehended. There is probably no sign which causes the teacher or writer more embarrassment in his efforts to explain clearly. Take, for example, the description by Dr. Hughes, author of a very lucid treatise on physical diagnosis. Speaking of the *rude*, compared with the *vesicular* respiration, he says, it "is the *forte* of the same note, but on a loose and jarring string;" and, again, contrasting it with the normal vesicular murmur, he says, "In the one, the same soft breeze passes through a greater number of trees; in the other, the breeze is increased to a moderate gale." Not only is there a singular indefiniteness in the idea conveyed by this language, but the analogies selected for il-

lustration are defective in correctness. The *note* is not the same in *rude*, as in normal respiration, and the comparison to the gale is calculated to give the erroneous impression that the rude respiration is necessarily louder than the normal, which is so far from being true, that it may be in a notable degree less developed; the intensity being a variable element, having nothing to do with the distinctive character of the sign. The truth is, these terms *rude*, *rough*, and *harsh*, are unfortunate; they are not only inexpressive, but tend rather to mislead in the apprehension of the modification referred to. The sound is not intrinsically *rude*, or *rough*, or *harsh*. Even a well-marked bronchial respiration, to which the sound under consideration is an approximation, can hardly be said to have the qualities indicated by these terms. The bronchial respiration is not very unlike in character the endocardial sound which is characterized as a *soft* bellows murmur. Whatever appropriateness the designation has, is based chiefly on the fact that, in the rude respiration, the peculiar expansive, breezy attribute of the vesicular respiration, which has beeen referred to as the *vesicular quality*, is more or less impaired.

To form a correct idea of the modification usually termed *rude*, &c., it must be analytically decomposed, and the nature of its elements determined. It is an approximation to the bronchial respiration. It exhibits an incipient development of the character distinguishing the bronchial from the vesicular respiration. One of the most striking of these characters is the change in pitch. The pitch is raised. The vesicular quality is diminished; hence it approaches to a tubular or blowing respiration. The inspiration may be somewhat shortened, and occasionally a sound of expiration becomes developed and prolonged, constituting an important rythmical variation. By attention to these several points much will be gained in practically recognizing the modification; but it is not easy to find a satisfactory title to be substituted for the names generally in use. Of the several elements mentioned here, as in the case of the bronchial respiration, it seems to me the pitch modification is the most striking, and the most readily appreciated, while it is probably the most constant.

The expiration deserves to be distinctly noticed. Con-

siderable importance has been attached to a prolonged expiration, since its occurrence was pointed out as a frequent sign of early tuberculization, by James Jackson, the younger, of Boston, Mass. The best practical authorities have recognized this sign as a valuable contribution to the art of physical exploration. It is not, however, a constant modification. Its absence, therefore, does not furnish ground for the conclusion that tubercle does *not* exist. Moreover, it may exist as a normal peculiarity, and consequently alone it is not perfectly reliable. In the few instances among the cases I have collected in which a prolonged expiration was present, and the pitch noted, it was found to be higher, or as high as the sound of inspiration. Now, in health, over the greater part of the chest, if a sound of expiration be appreciable, it is found to be distinctly lower in pitch than the sound of inspiration. May it not be that the elevation of pitch in expiration has a diagnostic value fully as great, or even greater than when the inspiration is thus modified? May it not be that, in some cases in which the inspiration is not sensibly raised in pitch, the expiration may exhibit a change in this respect, and thus the latter furnish a more delicate sign of the presence of the disease? These are interesting, and possibly important questions, which are to be satisfactorily answered only by an accumulation of observations.

It occurs to me here to remark (what would have been more appropriate in connection with pneumonitis,) that the observations of Jackson and others have showed the expiration to become earliest, and in the most striking degree changed, in the development of the bronchial respiration. This fact would lead to the presumption that, in the modification generally known as the rude respiration, the change would be first and most distinctly declared, in the expiration. The expiration in the development of bronchial respiration is said first to exhibit the bronchial character. Although not hitherto recognized as such, I can have little doubt that the change thus noticed consists chiefly in the elevation of pitch. This produces a more striking change in the expiration than in the inspiration, because the change is really greater in amount. The expiration in health is lower in pitch, while in the bronchial it is higher than the inspiration. The degree of modification is, therefore, greater than in the case of the inspiratory sound.

In conclusion, it is highly important to bear in mind that the pitch of respiration at the summit of the right chest is frequently higher than on the left side, and that this may, or may not coexist with a greater development and prolongation of the sound of expiration on the right side. The practical inference is that these modifications, when present on the right side, are, in themselves, less significant than when they occur on the left side, and, in the former situation, are to be less confidently relied upon, especially in the absence of marked rational evidences of tuberculous disease.

II. *Observations in Cases in which the Tuberculous Deposit was abundant.*—The cases arranged under this head are comparatively few in number, amounting to but *five*. In each of these cases, on the side in which the tuberculous deposit was most abundant, as declared by the relative dullness on percussion, and other signs, the respiratory sound was found to be higher in pitch than on the side in which the morbid product was less in amount. In *three* of the cases, the disparity in the pitch of respiration is simply noted in general terms. In the fourth observation it is stated that there existed a prolonged expiration, with an interval between the sounds of inspiration and expiration. The expiratory sound, however, was so feeble that its pitch was not ascertained.

In the fifth observation, an expiratory sound is stated to have been present, higher in pitch than the inspiration, with an interval between the two sounds.

So far as these observations go they lead to the conclusion that the respiratory sound over the site of an abundant tuberculous deposit, when it is appreciable or not obscured by râles, will be found to be elevated in pitch, and representing more or less of the other characters distinguishing the bronchial respiration.

III. *Observations in Cases of Tubercle advanced to the Stage of Excavation.*—The cases coming under this head are of special interest, having reference to the study of the variations in the pitch of respiration occasioned by the presence of a cavity or of cavities within the chest. It has been seen already, in the single case of perforation of the lung and gangrenous cavity, presented in another division, that cavernous respiration, under these circumstances, was low in pitch. This was true in all the cases

of tuberculous excavation embraced in this subdivision. The cases studied with reference to the cavernous respiration are *seven* in number. In one of these cases, however, the existence of cavities which had been predicated on physical signs, was disproved by post mortem examination. This case is included in the series for convenience, and serves to illustrate certain points in diagnosis which are to be carefully attended to, in order to avoid an erroneous conclusion. Of the remaining *six* cases, in *two*, autopsical examinations were made, showing the existence of cavities, and their situation with reference to the parts of the chest where the physical signs of excavation had been determined, as noted in the recorded observation before death. The dissection in both instances was made at my request, by Dr. John C. Dalton, Jr., to whom I am indebted for reports of the morbid appearances. The attention of the reader is particularly invited to the cases which include autopsies. (See observations 1 and 3, under same head in Appendix.) In the *four* cases without autopsies, the existence of excavations and their particular situations, are not, of course, demonstrated. The evidence consists of the physical signs, and other facts pertaining to the histories.

So far as the observations go, they show, as already remarked, that the pitch of the cavernous respiration is low, contrasting in this respect, strongly with the high-pitched bronchial respiration. This is not claimed as a newly discovered fact. It is stated by Dr. Walshe, in the last edition of his treatise on diseases of the lungs and heart; and is implied in the language used by Barth and Roger. It is not, however, dwelt upon by either with much emphasis, and, if I am not mistaken, it does not generally receive, with practical auscultators, attention as a diagnostic criterion.*

The pitch of the expiration, when it enters into the cavernous respiration, does not appear to have attracted notice. In the cases I have observed, in which the sound of expiration was appreciable, the pitch was lower than that of inspiration. This forms a striking feature distin-

* For example, in a treatise on disease of the chest, issued during the present year, I find the following statement: "A naturally cavernous respiration exists over the trachea and larynx."

guishing the cavernous from the bronchial respiration. In the latter, as has been seen, the sound of expiration, when appreciable, is higher, or at least equal in pitch to the sound of inspiration.

The cavernous sound is, of course, devoid of what has frequently been referred to as the vesicular quality of normal respiration. This point is generally noted in the observations. It is a point important to be borne in mind in determining the presence of a cavernous respiration; else the vesicular murmur, with its low pitch of inspiration, followed by a still lower expiration, may be thought to denote an excavation. Obs. 7 (see Appendix) illustrates the liability to error incident, in part, to not observing sufficiently this precaution.

The following elements, then, combine to form the cavernous respiration: A *blowing* sound, that is to say, a sound in which the vesicular quality is absent; a low pitch compared with that of the bronchial sound; an expiration, if present, lower in pitch than the inspiration.

Keeping in view these characters, it is probably easy, in most instances in which there are cavities of any considerable size, to determine, with precision, their particular situations, by ascertaining the limits circumscribing the space over which a well-marked cavernous respiration is found to be present. We are assisted in defining the boundaries of these spaces by the fact that excavations are generally surrounded by tuberculous consolidation which will be likely to raise the pitch, and thus exhibit the cavernous sound in stronger contrast. If, however, this were not true in any instance, but, on the contrary, supposing a cavity to be surrounded with lung giving a vesicular sound, we can generally satisfy ourselves of the lowness of pitch (having already satisfied ourselves of the non-vesicular character of the sound in question,) by comparing it with the normal bronchial respiration heard at the sterno-clavicular junction, or with the tracheal respiration. A cavity at the apex of the lung will be more readily discovered by the respiration if it be anteriorly and superficially situated. It is hardly necessary to add that it must be more or less empty, and communicate more or less freely with the bronchial tubes. To ascertain the pitch and other characters, also, the respiration in the surrounding lung must be free from râles.

Tuberculous excavations, as is well known, generally coexist with a greater or less amount of crude tuberculous deposit. In cases, therefore, which present the physical signs of cavities, we have a high-pitched non-vesicular sound, *i. e.*, the bronchial respiration, more or less, over parts of the chest, at its summit, in which the cavernous variations are absent. The observations in the cases of tubercle advanced to excavation furnish illustrations of this fact.

In searching for the sites of cavities, the stethoscope is obviously preferable, since it enables us to circumscribe better the source of sounds. In immediate auscultation, the sounds are received from a wider circuit. The charter of the respiration, as heard by the latter method, will depend on the predominance of excavations or solidification within a certain distance of the part to which the ear is applied. If a large cavity exists, or several cavities, although the intervening tissue be solidified so as to give dullness on percussion, the pitch of respiration may be lower than on the other side in which the tuberculous disease is less advanced. There, the combination of a low, non-vesicular respiration, with dullness on percussion, affords presumptive evidence of the stage of excavation. This is illustrated by Obs. 1. See Appendix.

The importance of attention to the pitch variations in determining the presence of the cavernous respiration is enhanced by the fact that other physical signs of excavations are inconstant and unreliable. A tympanitic resonance on percussion cannot be depended on. It may be absent, although cavities exist, and may be present without excavations. The cracked pot variety is rarely discoverable, and may be due to the expulsion of air from the bronchial tubes or other morbid conditions. Pectoriloquy, which was regarded by Laennec as a pathognomonic sign, is not only frequently absent, but does not possess that distinctive significance attributed to it by the illustrious founder of auscultation. Between pectoriloquy and intense bronchophony there is no intrinsic difference. In other words, pectoriloquy is but a variety of broncophony, and may occur not only in cases with excavations, but when the lung between a bronchial tube and the ear is in a state of solidification from tubercle or effused fibrin. For this statement I have the authority of

Dr. Walshe. But, if it be substantiated by a sufficient number of observations that a cavernous respiration is uniformly low in pitch, with a sound of expiration lower than the inspiration, these traits, taken in connection with its blowing or non-vesicular character, will suffice for its recognition, and consequently, not only for the diagnosis of the stage of excavation, but the localization of the cavity, the estimation of size, &c.

IV. *Arrested Tubercle.*—During the time I have been engaged in making observations with reference to the present subject, two cases have fallen under my notice in which the tuberculous disease appeared to have been arrested; in other words, the morbid product had not continued to accumulate, nor had the primary deposit advanced through the processes of softening and excavation. The cases have not any special importance in connection with the subject of this memoir. I have given them under a distinct head in the Appendix, because they are distinguished from the other cases by the fact of the disease having ceased to make progress.

In this point of view the cases are not without interest. In the first case the disease was declared a year previous, and some cough and expectoration still remain. In the second case, the rational symptoms marking the period of the tuberculous deposit occurred several years ago, and the patient is entirely free from any symptoms of pulmonary disorder. In both instances the disease has left permanent evidence of slight injury to the lung on one side, consisting of disparity of resonance on percussion, and an elevation of the pitch of respiration.

The arrest of tubercular disease is doubtless much more frequent than has been heretofore recognized; and with the views now entertained by the most intelligent practitioners respecting the pathology of tubercle, and the proper ends of treatment, there is reason to hope that cases of this kind will become more numerous. As one of the causes of a lasting disparity between the two sides of the chest in the physical signs developed by percussion and auscultation, this is to be borne in mind in the examination of patients with reference to existing pulmonary affections.

In the practice of auscultation with the view to pitch variations, the same rule of course obtains which is ap-

plicable to physical exploration in general, viz: the sounds of the two sides of the chest, in corresponding situations, are to be listened to in succession, and compared with each other, always recollecting to make due allowance for certain natural deviations which are determined by observations made on persons in health, and also, as just remarked, bearing in mind the changes incident to pre-existing disease. That the respiratory sounds may present strongly marked variations in pitch will be readily understood, if it be observed for a moment how easy it is to breathe audibly with the mouth in unison with musical notes, and even in this way to hum a tune. Almost any one who has any fondness* for music is practically familiar with this. Or, as an illustration, let the pitch of sound be observed when different words or letters are whispered after the ingenious method of representing the variations in pitch of the bellows murmur of the heart, suggested by Bouillaud and Hope. The letters *R. S.*, and the syllable *who*, thus exhibit quite different degrees of altitude in pitch. It is easy to distinguish the difference in pitch among endocardial sounds. There is no greater difficulty in appreciating variations in this respect in pulmonary sounds. A musical ear is doubtless an advantage, as also some musical cultivation; but neither is absolutely essential. A medical student, who has been accustomed to follow me in my examinations, and who is unable to distinguish one tune from another, finds no difficulty in recognizing the pitch variations in respiration, and in several instances has made and noted observations by himself which have corresponded with mine. The practice of comparing the pitch of respiratory sounds doubtless leads to an increased facility in directing the attention to, and clearly perceiving variations. This I have found in my short experience, since I have been particularly interested in the subject.

In conclusion, the more important practical deductions submitted in this section are recapitulated in the following summary. These deductions, I would again repeat, are

* The pitch of respiratory sound may be readily imitated by modulating, with the lips, breath sounds in the mouth. I have sometimes found this useful in comparing the pitch of sound in the two sides of the chest.

submitted as propositions to be confirmed, enlarged, or corrected. by further investigations:

1. In the second stage of pneumonitis, the inspiratory sound is high in pitch, followed by an expiratory sound, which is frequently, if not generally higher in pitch than the sound of inspiration; these traits being found in conjunction with more or less of the other characters which belong to the bronchial respiration.

2. In cases of small tuberculous deposit, or incipient phthisis, the most striking modification of the respiratory sound is the elevation of pitch. This elevation of pitch is an important element of what is generally known as the *rude*, *rough*, or *harsh* respiration. If an expiratory sound be appreciable under these circumstances, it may be as high, or higher in pitch, than the sound of inspiration, and the variation of pitch in the former is greater, inasmuch as the pitch of expiration in the normal murmur is lower than that of inspiration. Elevation of the pitch of expiration, therefore, may be found to be valuable as a sign of incipient phthisis in some cases in which the variation in inspiration is not marked.

3. If the tuberculous deposit be more abundant, the pitch of respiration is in a more marked degree elevated. The expiratory sound, if appreciable, will be more likely to be as high, or higher in pitch than the sound of inspiration. More or less of the other characters of the bronchial respiration are at the same time present.

4. In pleurisy with effusion, the pitch of respiratory sound is elevated, in conjunction with more or less the characters of the bronchial respiration, over the parts of the chest lying above the compressed lung. In cases of large effusion, after its complete removal by absorption, the affected side may continue to present a variation in pitch, the symmetry of the two sides being permanently impaired, in this respect, after the vesicular quality of respiration is regained.

5. In cases in which tubercle has advanced to the stage of excavation, the site of a cavity of considerable size is indicated by a blowing sound, low in pitch with an expiratory sound (if appreciable) lower in pitch than the sound of inspiration. These traits constitute the elements of the cavernous respiration, and the cavernous respiration is the most constant and reliable of the signs of an excavation.

If the cavity be very large, or there are several cavities, the respiration may be modified to such an extent that, on immediate auscultation, over the whole summit of the chest, it may present the cavernous characters. This may be the case while dullness on percussion shows the existence of more or less solidification in connection with the cavities. The coexistence of relative dullness on percussion, and a low-pitched blowing respiration, denotes the predominance of excavation.

The cavernous respiration may also be present in cases of excavation from circumscribed gangrene, and in pneumothorax with perforation.

6. In arrested phthisis, the traces of the disease may be manifested by a permanent variation in the pitch of respiration, in connection with more or less dullness on percussion at the summit of the chest on either side.

APPENDIX.—CLINICAL OBSERVATIONS.

The following account of clinical observations embraces a synopsis of the characters of respiratory sounds relating to the subject of the foregoing essay, as noted at the time the examinations in the cases severally were made. Aside from these, details pertaining to the histories of the cases will be introduced, only so far as they seem to be important with reference to the diagnosis, the stage of the disease, or the appearances found after death. The object will be to condense as much as possible, with due regard to the points just mentioned.

For convenience of reference, the observations are distributed into different nosological groups; cases of each disease forming a distinct series. The classification of the observations corresponds with the arrangement of subjects in the foregoing essay, so that reference from either to the other may be easily made.

FIRST SERIES.—PNEUMONITIS.

Observation 1.—Dec. 30, 1851. Hospital patient. Pneumonitis affecting lower lobe of right lung. Second stage of the disease. Loud tubular respiration over the site of the solidified lung. Pitch of respiration notably high.

Obs. 2.—January 27, 1852. Wm. Hasmer. Hospital patient. Disease of seven days' standing. Flatness on percussion over the lower third of chest, posteriorly, on the left side. The respiratory sound is bronchial or tubular, the inspiration somewhat shortened; a prolonged expiration is present, with an interval between the sounds of inspiration and expiration. Over the inferior third of the

right side, posteriorly, the respiration is vesicular, supplementary, without any sound of expiration. The pitch of sound on the left side, compared with the right, is in a marked degree high, the contrast nearly as striking as between the sound of the fife and the german flute.

Obs. 3.—Jan. 29. George Young. Hospital patient. Has been confined to bed four days. Dullness on percussion exists over the inferior third of the left chest. Over this portion the respiratory sound is notably higher in pitch than over the corresponding region of the right side. The inspiration is somewhat shortened. There is a faint but prolonged expiration, and an interval between the two sounds.

Obs. 4.—Jan. 30. Mary Gaball. Hospital patient. Disease occurring as complication of continued fever, third day after taking to the bed. Pneumonitis confined to lower lobe of the right lung. Inferior third of right chest, posteriorly, flat on percussion. The pitch of respiration over this region is notably higher than on the corresponding region of the left side. The expiration is somewhat prolonged, and higher in pitch than the inspiration. A short interval between inspiration and expiration.

Obs. 5.—Wm. Wrick. Hospital patient. Disease affecting upper and middle lobes of the right lung. Respiration on the right side, posteriorly, bronchial; the pitch high, inspiration shortened, and the expiration prolonged. The pitch of the expiration is notably higher than that of inspiration. Anteriorly, the respiratory sounds on the right side too feeble to determine the pitch, &c.

On the 9th of Feb., the respiratory sound on the right side anteriorly, sufficiently developed to study characters. It is bronchial, higher in pitch than on the left side; expiration prolonged; inspiration shortened, and an interval between the two sounds. The pitch is distinctly higher than on the left side. On the left side the respiration is supplementary. A faint sound of expiration is appreciable, continuous with the sound of inspiration, and apparently lower in pitch than the inspiratory sound.

Obs. 6—Feb. 10. Catherine Finn. Hospital patient. Disease affecting middle lobe of right lung. In first stage. Crepitant rale in mammary and axillary regions. The crepitation obscures the recognition of pitch. On

the left side the respiration is supplementary. An expiratory sound is present on this side, continuous with the sound of inspiration, and notably lower in pitch than the inspiratory sound.

Feb. 11. Crepitant rale still heard in mammary region of right side. Posteriorly over the middle third of the right side, there exists moderate relative dulness on percussion. A feeble crepitant rale is heard in this region, but not enough to obscure the pitch of respiration, which is notably higher than over the corresponding region on the left side. The expiratory sound over the middle third of the right chest, posteriorly, is feeble, and appears to be lower in pitch than the sound of inspiration.

Obs. 7.—Feb. 12. Michael Russell. Hospital patient. Eighth day of disease. Posteriorly, over middle and lower thirds of right chest, flatness on percussion. In these regions respiration notably higher in pitch than over the corresponding situation on the left side. The sound of respiration is too feeble to determine the pitch.

Obs. 8.—Feb. 12. Philip ———. Hospital patient. Disease of a week's standing. Marked dulness on percussion over the lower and right middle thirds posteriorly. Respiratory sound in these regions, in ordinary respiration scarcely appreciable; on forcible respiration more developed, without an appreciable sound of expiration. The inspiration is higher in pitch than on the left side.

On the left side the inspiration is followed by a continuous sound of expiration, which is lower in pitch than the sound of inspiration.

Obs. 9.—Feb. 12. James Whalen. Hospital patient. Disease affecting the upper and middle lobes of right lung, of nine days' standing. Flatness on percussion exists over the upper and middle thirds anteriorly, and over the whole side posteriorly. Percussion over the lower third anteriorly, on the right side, elicits clear resonance. Anteriorly, over the upper and middle thirds, a crepitant rale is heard at the end of the inspiratory act.

Over the right side, posteriorly, the respiratory sound is notably high in pitch, and quite intense over the whole side. The sound of expiration is prolonged to an equality in duration, with the inspiration, and there is an interval between the two sounds. The expiratory sound is higher in pitch than the inspiratory. This is the more marked the higher up the chest the ear is applied.

Obs. 10.—Feb. 13. Jane McNolty. Hospital patient. Disease occurring as a complication of typhus, having taken to bed six days ago. Marked relative dulness on percussion exists over the middle third of left side, posteriorly, and in the axillary region of same side. Over the inferior third, anteriorly and posteriorly, a gastric tympanitic resonance is transmitted. The crepitant rale is heard in the axillary region at the end of the inspiration. Over the middle third, the inspiratory sound is moderately loud, with no appreciable sound of expiration. It is somewhat shorter than the sound of inspiration over the corresponding region of the right side. It has less of the vesicular quality, and is notably higher in pitch. In the latter respect the disparity between the two sides is most marked. A faint crepitant rale is heard at the inferior portion of the right chest posteriorly.

Obs. 11.—Feb. 13. John Jarry. Disease of a week's standing. Marked relative dulness on percussion exists over the lower third of right chest posteriorly, and distinct broncophony. No rales observed. The respiratory sounds on both sides quite feeble. Over the lower third of the right side the pitch is notably higher than over the corresponding region of the left side. It is notably higher than over the superior portion of the chest on the same side. The inspiratory sound over the lower third of the right side is relatively shorter in duration. There is a sound of expiration obviously higher in pitch than the sound of inspiration, with an interval between the two sounds. On the left side there is a short, continuous sound of of expiration, which is obviously lower in pitch than the sound of inspiration.

Remarks.—In this case, two medical students,* who had been present at previous examinations of patients, and were accustomed to verify the results of my observations, were requested to explore and compare the relative pitch of respiration on the two sides, and the relative pitch of the inspiration and expiration on both sides. Without being acquainted with the result of each other's exploration, or of mine, the conclusions in the three instances were found to be the same. The foregoing statement is noted in connection with the observation.

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* Mr. J. R. Smith and Mr. Charles Ap. A. Bowen.

Obs. 12.—Feb 19. Fitz Morris. Hospital patient. Fourth day of disease. Disease seated in the lower lobes of right lung. Crepitant rale was apparent yesterday, and is now heard at lower part of chest posteriorly. Broncophony over these regions. The respiratory sound is loud, non-vesicular, on high pitch compared with the sound on the left side. An expiratory sound is heard, higher in pitch than the sound of inspiration, with an interval between the two sounds. On the left side, no sound of expiration is appreciable.

SECOND SERIES.—PLEURITIS.

This series will embrace but three cases; in two of which the patients were laboring under the subacute form of the disease, with in one case considerable, and in the other large effusion. In the remaining case, the patient had recovered from chronic pleurisy, and the variations were, therefore, those incident to the permanent changes left by the disease.

Obs. 1.—Jan. 4. Conrad Reushling. Hospital patient. Chronic pleuritis affecting the left side. The lower and middle thirds of this side, anteriorly, are flat, and the upper third relatively dull on percussion. Posteriorly, lower third flat, and the upper and middle thirds dull. Over the upper and middle thirds posteriorly, respiration is feeble, and no sound of expiration appreciable. Over the right side the respiration is supplementary. The pitch of sound on the left side, posteriorly, is notably high. This aside from feebleness, is the most striking point of disparity on comparing with the left side. Anteriorly, over the right chest, no sound of respiration appreciable, except just below clavicle, and here the pitch was obscured by dry crackling.

Feb. 1. Up to this date he progressively improved, and had become sufficiently restored to be discharged from the hospital. On the left side, at the summit, there is now slight dulness on percussion; at the inferior portion the dulness is greater. The left chest is one-half an inch less in circumference than the right. The left shoulder is somewhat depressed. The left side expands less at the summit than the right. The respiratory sound on the right side, is exaggerated, supplementary. On the left it

is relatively feeble. In both sides, the respiratory sound has the vesicular quality, a feeble sound of expiration being appreciable, and the duration of the respiratory sounds being apparently equal. After careful examination, I cannot satisfy myself of a disparity of pitch between the two sides.

Remarks.—The following remarks were appended at the time of the last observation. This case affords an opportunity of comparing an exaggerated, with a relatively diminished vesicular sound. The physical and rational signs show that the patient has labored under subacute pleurisy, from which he has nearly recovered. There is slight condensation of the left lung from compression, and less expansibility from pleuritic adhesions. Here are two opposing circumstances as respects their probable influence on the respiration. The defective expansibility might be expected to occasion a pitch of sound somewhat lower than that on the right side, the respiration in the latter being, at the same time, exaggerated. On the other hand, the condensation would be expected to elevate the pitch. These apparently conflicting circumstances serve to antagonize each other, the fact being that the respiratory sound at the summit of the chest on both sides is not far from equal. It may be inferred from this case that exaggeration of the vesicular murmur does not tend, in a marked degree, to elevate, nor, on the other hand, a feeble vesicular murmur to lower, the pitch of sound.

Obs. 2.—Feb. 8. Ortmann. Hospital patient. The effusion, in this case, was large, compressing the lung into a small space at the upper and posterior part of the chest. The disease was in the right side. No respiratory sound is to be heard save in the clavicular, post-clavicular, supra-spinous, and interscapular regions. Over the supra-spinous, and interscapular regions, the sound is feeble, non-vesicular; the expiration louder and higher in pitch than the inspiration. The inspiration is shortened, the expiration prolonged, with an interval between the two sounds.

On the left side, in the corresponding regions, the respiratory sound is supplementary. A sound of expiration is heard, which is about one-fourth the length of the in-

spiration. The sound of expiration follows that of the inspiration without any appreciable interval. In pitch, the expiration on this side is distictly lower than the inspiration.

In pitch, the inspiration, as well as expiration, is higher on the right than on the left side; but this is more especially marked in the expiration.

Obs. 3.—Feb. 10. Eliza Moore. This patient, eighteen months ago, had subacute pleurisy of the left side. The chest, on this side, was greatly distended, the heart being dislocated, so that its pulsations were seen and felt to the right of the sternum. She has remained in hospital up to this present time, but is now quite well, and has been employed as a domestic, performing hard labor, such as washing, scrubbing floors, &c. The left chest is considerably contracted. The impulse of the heart is now felt somewhat above the normal situation.

The left chest is relatively dull on percussion. The respiratory sound has the vesicular quality, but is higher in pitch than on the right side. There is a short, feeble, continuous sound of expiration. The pitch of the expiration appears to be lower than that of the inspiration. Near the right sterno-clavicular junction, the respiration is bronchial; the inspiration high in pitch, with an expiration higher than the inspiration. It is more intense, and on a higher pitch on the right than on the left side, near the sterno-clavicular junction; this being the reverse of the vesicular respiration, which is higher in pitch on the left side.

The pitch of the vesicular respiration is not increased by a deeper and stronger act of respiration.

THIRD SERIES.—GANGRENE AND PNEUMOTHORAX.

Under this head, a single case only will be embraced. This case occurred in private practice. The patient, aged about forty-five, had suffered, for between one and two years, with occasional attacks of epilepsy. He had for many years been addicted to the use of stimulants. The mental faculties were somewhat impaired, the memory especially. On the 28th of January, after a severe epileptic paroxysm, pulmonary symptoms became developed. The physical signs of pneumonitis and pleurisy being absent the pulmonary affection was supposed to be

bronchitis. On the 5th February, when I again visited in consultation, there were the physical evidences of solidification of lung at the middle third of the right chest anteriorly and posteriorly, and a dirty expectoration with a characteristic fetid odor. It was evident that the patient was laboring under pulmonary gangrene. On the 8th, I again saw the case, and at this time the fetid expectoration had ceased, and he presented the physical signs of pneumothorax, viz: tympanitic resonance at the upper and middle thirds of the chest anteriorly, and metallic tinkling at the inferior third, just below the nipple. On the 9th, I noted as follows: "The physical exploration was brief, owing to the great prostration of the patient. On the right side, over the upper and middle thirds, anteriorly, and on the upper third, posteriorly, percussion gives a tympantic resonance. Below, flatness on percussion. The respiration over mammary region is non-vesicular, and low in pitch. Above this region, in front, the sound is indistinct. On the upper third, posteriorly, the respiration is high in pitch. Below, feeble, but low in pitch."

The patient died on the 10th, and the chest was examined on the 13th, by Dr. John C. Dalton, Jr., who has furnished the following statement of morbid appearances:—

"Autopsy of Mr. S——, February 13th, 1852. On opening the cavity of the right pleura, a considerable quantity of rather fetid gas escaped, and on raising the sternum the same cavity was found to contain about two pints of a dingy, yellowish-gray purulent fluid. The pleural surface at the anterior part of the chest was covered by a thin coating of recent lymph.

"The right lung reduced to about one-fifth of its natural size, was compressed against the spine and the posterior wall of the chest. Before removing the fluid from the pleural cavity a pipe was inserted into the trachea, and on inflating the lungs the air escaped freely in large bubbles, from a point situated toward the posterior part of the right lung, about the junction of its upper and middle thirds. The right lung, removed from the chest, was found to be completely carnified by pressure, except in those parts occupied by disease. No air-cells were visible anywhere, and the whole lung was destitute of crepitation. The lobes were adherent to each other by recent lymph. The

upper third of the lower lobe was occupied by gangrene, which had reached an advanced stage, the pulmonary tissue forming a soft, shreddy, disintegrated mass, of a fetid odor, and a dirty, grayish color and infiltrated with purulent fluid. A gangrenous cavity of considerable size, had apparently existed at this spot before the compression of the lung. The opening by which it had communicated with the pleural cavity was about the size of a goose-quill, and situated posteriorly at the very uttermost portion of the lower lobe. The limits of the gangrenous portion of the lung, were well defined, but only a very little inflammation existed in its neighborhood, the solidification of the pulmonary tissue, except just outside the limits of this gangrenous cavity, being entirely of a passive character, and due to its compression by the pleuritic effusion. The left lung and pleura were healthy. There was no tubercle anywhere. Signed J. C. D.

Remarks.—On comparing the above appearances with the physical forms noted before death, it is evident that the non-vesicular respiration, with a high pitch, which was heard at the summit of the chest posteriorly, was due to the consolidated lung in this situation. The non-vesicular sound, low in pitch, heard in the mammary region, is attributable to the entrance of air into the pleural cavity through the perforation. The low pitched non-vesicular sound heard at the inferior posterior part of the chest was probably owing to the entrance of air into the gangrenous cavity.

FOURTH SERIES.—TUBERCULOSIS.

For convenience of reference, the cases of tuberculosis will be distributed into four subdivisions, according to the amount and stage of the disease, as follows:

1. Small tuberculous deposit.
2. Abundant tuberculous deposit.
3. Tubercle advanced to excavation.
4. Tubercle arrested.

1. *Small Tuberculous Deposit.*

Obs. 1.—January 4. George Laver. Hospital patient. Slight dulness at summit of right chest. Respiration at

summit of right chest relatively feeble, without any aberration of rhythm. The elevation of pitch compared with the left side, is distinct.

Remarks.—The symptoms in the history of this case pointing to the existence of tubercle are as follows:—cough for one and a half years, with slight expectoration. Slight hæmoptysis. Respirations increased in frequency ranging from twenty-four to thirty-six. The patient was not much emaciated nor greatly debilitated; had not been subject to night perspirations or pleuritic pains. Countenance not notably pallid; no febrile movement.

This was one of the earliest observations relative to the subject, when I was satisfied simply to ascertain the pitch of the respiratory sound over the site of the tubercle as determined by percussion, without directing attention to comparative pitch of expiration, and other points. This remark will account for the limited scope of the observations in several other instances.

Obs. 2. —Jan. 4. Slayter. Hospital patient. At the summit of right chest marked relative dulness on percussion. The pitch of respiration is higher than on the left side. Aside from this, a disparity is not apparent, except in the relative feebleness of sound on the right side. No murmur of respiration is appreciable.

Jan. 27th. The following was noted as a distinct observation, without reference to the former: I find relative dulness at the summit of the right chest anteriorly. Over this situation the respiratory sound is relatively feeble. I cannot discover a difference of inspiration between the two sides, nor is there a sound of expiration appreciable on either side. Aside from relative feebleness, the elevation of pitch appears alone to distinguish the respiration on the right from that on the left side.

Feb. 9. The difference in the vesicular quality between the two sides is not marked. The marked difference is in pitch.

Remarks.—The symptoms, in the history of the case, pointing to tubercle, are as follows: cough of four months' continuance, with small expectoration. Night perspirations. Is debilitated and pallid, but not greatly

emaciated. Pulse 88. Respiration 18. Has not had hæmoptysis, nor complained of pleuritic pains.

Obs. 3.—January 28th. Aaron Young. Hospital patient. Slight relative dulness on percussion in right infra-clavicular region. The respiration in the right infra-clavicular region is higher in pitch than in the corresponding region of the left side. The expiration is prolonged, with an interval between the inspiration and expiration. In the left infra-clavicular region the respiration is lower in pitch. There is a short sound of expiration, with a short interval between the two sounds. The inspiration is longer than on the right side. Slight broncophony exists in the right infra-clavicular region.

March 2d. At summit of right chest, the expiration as long as the inspiration. Inspiration and expiration about the same in pitch. Near the sterno-clavicular junction, on both sides, loud bronchial respiration, but much more developed, and higher in pitch on the right side. Expiration more developed on this side, the pitch about the same as that of the inspiration.

March 3d. Expiration and inspiration at summit of right chest apparently about similar in pitch, the expiration notably prolonged. At the summit of the left chest a sound of expiration is appreciable, notably lower in pitch than the inspiration. The contrast between the two sides consists in an elevation in the pitch of both sounds on the right side; a prolonged expiration, about equal in pitch to the inspiration on the right side, while the pitch of the expiration is lower than that of the inspiration on the left side.

Remarks.—I give this among the cases of tuberculosis, but I do not feel positive with respect to the diagnosis.* On another examination made on the day I am writing, viz: March 8th, I find the same physical signs, with marked relative dulness over the right scapula below the spinous ridge. The symptoms in the history which relate to phthisis are cough, since January, with moderate expectoration. No hæmoptysis or pleuritic pains. He entered the hospital for cough and general debility, Janu-

* The correctness of the diagnosis was subsequently demonstrated.

ary 13th. Afterward he contracted typhus, from which he is now convalescent. His cough and expectoration are less at the present time than when he entered. The physical signs at the summit of the right chest may possibly be due to a normal disparity, which, as has been seen, frequently exists to a greater or less extent—in this instance, perhaps unusually marked; or they may be due to uniform enlargement of the bronchi on the right side.

Obs. 4.—Jan 30. Felata Kyser. Hospital patient. Slight relative dulness of resonance in left infra-clavicular region. The dulness is more marked over the left scapula, and in the latter situation there is a distinct broncophony. The pitch of respiration is in a marked degree higher on the left than on the right side, at the summit of the chest anteriorly and posteriorly. The expiration is not prolonged. The elevation of pitch is the chief source of disparity between the two sides.

Remarks.—The symptoms pointing to tuberculous disease are cough, with small expectoration, pleuritic pains; occasional night perspirations; respiration 28; the pulse is 70. She had not had hæmoptysis.

Obs 5.—Feb. 1. Harmon Kramp. Hospital patient. Relative dulness of resonance, and distinct broncophony, in the right infra-clavicular region. The pitch of respiration, in this situation, is notably higher than on the left side. The inspiration is somewhat shortened, the expiration prolonged, and higher in pitch than the inspiration, with an interval between the two sounds.

Obs. 6.—Feb. 2. Mrs. R. Out-patient. On auscultation, before percussing, the respiration is found to be notably higher in pitch in the right, than in the left infra-clavicular region. Aside from this disparity in pitch, the inspiration on the right side is somewhat shortened, with a short sound of expiration; on the left side no sound of expiration is appreciable.

Slight relative dulness of resonance exists in the right infra-clavicular region, and distinct broncophony.

Remarks.—The symptoms in the history of this case pointing to tuberculosis are, cough, troublesome at night,

almost entirely without expectoration; pleuritic pains; considerable emaciation; pallid complexion; night perspirations; tuberculous fever. Respiration 28.

Obs. 7.—Feb. 12. Patient at almshouse; name not noted. Slight dulness on percussion at the summit of chest on the left side. Below, resonance equal on both sides. The respiratory sounds, at the summit of the chest, on both sides, are about equal in intensity. There is an equally short, faint, scarcely appreciable expiration on both sides. The pitch, however, on the left side is notably higher. The vesicular quality is also somewhat diminished on the left side.

Remarks.—The symptoms in this case were not noted. It is simply stated that the history and symptoms point to tuberculosis.

Obs. 8.—Feb. 16. Mrs. R. Private patient. Marked relative dulness on percussion over the right scapula, with broncophony. Slight relative dulness in right infraclavicular region. The respiratory sound at the summit of the chest is notably higher in pitch than on the left side. There is a faint sound of expiration, which is prolonged, and appears to be higher in pitch than the inspiration. On the left side, the sound is lower in pitch, the vesicular quality is more marked, and no sound of expiration is appreciable.

Remarks.—In this case, I was led to the site of dulness on percussion, by the signs developed by auscultation, resorting to the latter method before the former. There are few symptoms denoting, directly, pulmonary disease in the case. The patient has been recently confined, having had three children in the space of five years; lactation protracted during the last pregnancy up to the period of quickening. Since her confinement she has had chills, with irregular paroxysms of febrile movement. She is considerably emaciated and prostrated, presenting a morbid aspect. Cough has been present, only occasionally, and is not a prominent symptom. The expectoration is insignificant; she has not had hæmoptysis, nor distinct pleuritic pains; the secretion of milk was tolerably abun-

dant, but weaning was speedily resorted to, and she has since improved in strength and appearanc, without any further development of pulmonary symptoms. These remarks were written three weeks after the above observations were noted.

Obs. 9.—Feb. 22. Murdoch Gillis. Hospital patient. On immediate auscultation, the pitch of respiration is higher on the right side at the summit. This is more marked on mediate auscultation. The pitch in the right infra-clavicular region is highest toward the acromial angle. There is here a prolonged expiration higher in pitch than the inspiration.

Remarks.—The signs on percussion are inadvertantly not embraced in the observation. It is noted that Mr. Smith, one of the resident students at the hospital, had made and recorded the results of his examination prior to mine, which were afterward compared with the above and found to correspond.

The symptoms in the history pointing to tubercle, are as follows: cough of eleven months' standing; moderate expectoration; considerable emaciation, pallor and debility, and, of late, slight perspirations at night. Has not had hæmoptysis nor pleuritic pains. Pulse 108; respiration 30.

Obs. 10.—Feb. 24. Robert Evans. Out-patient. Slight dulness on percussion in right infra-clavicular region. The pitch of respiration in this region is higher than on the left side. There is no appreciable sound of expiration in this situation.

Posteriorly, over the scapula above and below the spinous ridge, there is marked relative dulness on percussion. The respiratory sound in these regions is very feeble; but, in forced respiration, the pitch is determined to be notably higher than on the left side, and a sound of expiration is heard as high or higher than the sound of inspiration. Moderate but distinct broncophony exists at the summit of the right chest, anteriorly and posteriorly, and not on the left side.

Remarks.—The patient has had a cough for nine months,

with small expectoration. Has lost considerable flesh and strength, and is incapacitated for labor, but is able to be up, and to walk out of doors. Respiration 24. Other details pertaining to the history were not recorded.

Obs. 11.—March 3. Louisa Stately, aged 8 years. Hospital patient. Distinct dulness on percussion in left infra-clavicular and over the scapular regions. The respiratory sound is more developed in the left than in the right infra-clavicular region. A difference in duration of the inspiration, or in the vesicular quality is not appreciable. There is a feeble sound of expiration on both sides. The chief point of disparity pertains to the pitch, and this is marked. It is higher on the left side. The expiration on this side appears to be about equal in pitch to the inspiration, while it is lower than the inspiration on the right side. The pitch is also notably higher on the left than on the right side, over the scapular region.

Remarks.—This patient has had cough for several months, and, once, slight hæmoptysis. She is thin and pallid. Before my examination in this case, Mr. Bowen, medical student, had made an examination with reference to the pitch of sounds, and recorded the results, which were found afterward to correspond with those obtained by me, save so far as the latter relate to the expiration, of which he made no note.

2. *Abundant Tuberculous Deposit.*

Obs. 1.—Jan. 4. Biselay. Hospital patient. Marked relative dulness of resonance at the summit of the left chest posteriorly, and of the right chest anteriorly. Respiration, on both sides, tubular, with prolonged expiration.

Distinct relative elevation of pitch at the summit of the left chest posteriorly, and of the right chest anteriorly.

Remarks.—In the above, as in other observations made shortly after my attention had begun to be directed to the study of the pitch of respiration, the fact of the disparity of pitch alone was noted, without reference to the expiration and other points.

Obs. 2.—Jan. 4. Julia Moniva. Hospital patient. At summit of right chest anteriorly, marked relative dulness on percussion. On auscultation, sonorous râles occasionally on both sides, at the summit of the chest. Respiratory sound more developed on the right side. No expiratory sound on either side. On the right side, distinct elevation of pitch. Distinct broncophony on the right side.

On another examination after the foregoing was noted, the patient in the mean time having coughed and expectorated, I find the respiratory sound more developed at the summit of the left chest, and on comparing the pitch, the elevation is more strongly marked on the right side than before. The disparity in pitch is the most striking point of difference between the two sides in this case.

Obs. 3.—Jan. 5. Welch. Hospital patient. Marked relative dulness on percussion at the summit of the left chest. Respiratory sound feeble, and tubular on the left side, presenting a marked elevation of pitch compared with the respiration on the right side.

Obs. 4.—Feb. 19. Daniel Cuit. Hospital patient. On immediate auscultation, prior to examination by percussion or inspection, the respiration at the summit of the right chest is found to be notably higher in pitch in comparison with that at the summit of the left chest. The inspiration on the right side is shorter than on the left. On the right side there is a feeble, prolonged sound of expiration, with an interval between the two sounds. The expiratory sound is too feeble to determine the pitch. On the left side there is a feeble, short sound of expiration, which is continuous with the sound of inspiration.

Afterward, it was found that the summit of the right chest is notably dull on percussion, and marked broncophony exists on this side.

Obs. 5.—Feb. 20. Evelina Potter. Hospital patient. On examination by auscultation, before practicing percussion or inspection, with a view to determine on which side tuberculous deposit might be present, or more abundant, I found, at the summit of the right chest, the inspiratory sound higher in pitch than on the left side; the vesicular quality less; a sound of expiration higher in pitch than the sound of inspiration, prolonged to the same length as

the inspiration, and an interval between the two sounds.

At the summit of the left chest the sound of inspiration is feeble, but lower in pitch than on the right side. A prolonged expiration exists on this side, high in pitch, with an interval between the two sounds.

On percussion there is marked relative dulness on the right side over the infra-clavicular and scapular regions.

An occasional sibilant rale is heard in the right infra-clavicular region.

Broncophony exists on both sides, but is much more marked on the right side.

3. *Tubercle Advanced to Excavation.*

Obs. 1. *With Autopsy.*—Jan. 25. Hugh McMullin. Hospital patient. Marked relative dulness on percussion, and broncophony at the summit of the right chest. Respiration over right chest at summit presents a notable elevation of pitch on comparison with the summit of the left chest. The expiration on the right side is prolonged, exceeding in duration the sound of inspiration. The inspiratory sound is shorter than on the left side and there is a longer interval between the two sounds, but less in duration than on the right side. On the left side the sound of expiration is higher in pitch than that of inspiration.

Jan. 31. Over a space in the right infra-clavicular region, about midway between the acromial and sternal sides of this region, the respiratory sound is lower in pitch than in every direction surronnding this space. A feeble sound of expiration is heard over this space. No pectoriloquy. Above this space, directly upon the clavicle, the respiration is intensely tubular, with prolonged expiration, the pitch quite high, resembling tracheal respiration.

In the left infra-clavicular region, over the space corresponding to that just referred to, (*i. e.* just below the clavicle, about midway between the two extremities,) the respiratory sound has a high pitch, the expiration being prolonged.

The right side presents, on percussion, a higher pitch of resonance, but a hollow, or tympanitic sound.

On immediate auscultation over the summit of the chest the right side gives the lower pitch. It is to be observed

in this case, that the side on which the percussion pitch is highest, has the lower pitch of respiration.

Feb. 1. A *bruit de pot fêlé* is to-day distinctly apparent over the space in the right infra clavicular region, characterized by the gravity of the pitch of respiration. The latter fact is also again verified.

Feb. 18. Confirmed again the statements made in the foregoing observation, and observed, in addition, that over the space in the right infra clavicular region presenting a low pitched sound of respiration, the expiration is lower in pitch than the inspiration. On examination of the left infra-clavicular region yesterday, and to-day, I find a space about midway between the acromial and sternal extremities, and about half an inch below the clavicle, in which the sound is blowing, *i. e.* non-vesicular, and lower in pitch than in every direction surrounding it. There is a sound of expiration here which is lower in pitch than the sound of inspiration.

This case proving fatal on the 21st of Feb., the lungs were examined on the 23d, by Dr. John C. Dalton, Jr., who has furnished the following statement of morbid appearances:—

"*Right lung.*—The upper, and one-half of the middle lobe are entirely without crepitation, being completely solidified except at situation of cavities, by deposits of yellowish, cheesy tubercle, and gray infiltration. The greater part of the upper lobe is occupied by a superficial irregular cavity nearly empty, twice or more as large as a hen's egg, situated quite at the apex, and rather toward the outer part of the lobe. No other cavity of any considerable size in the right lung. The lower lobe crepitates pretty freely, but contains also many small yellowish tubercles. Many miliary tubercles sprinkled over the pleural surface of the lower lobe.

"*Left lung.*—Apex of upper lobe crepitates freely, and is nearly healthy, but its middle portion is extensively solidfied by yellowish tubercle, and by well-defined spots of light-red hepatization. About the middle of the anterior portion there is a superficial cavity about the size of a walnut, containing a drachm or so of pure pus. Remainder of the left lung somewhat tuberculous, but less so than other parts."

Remarks.—It is evident, on comparing the foregoing

morbid appearances with the preceding observations, that the low pitched respiration (consisting of a low inspiration and a lower expiration,) heard over a circumscribed space in either infra-clavicular region, was due to the cavities existing in the lungs on both sides, while the high pitched respiration, heard in the neighborhood of these spaces in every direction, was owing to the solidification of the lung surrounding the excavations. The latter, in other words, was the bronchial, and the former the cavernous respiration. It may seem, at the first glance, that the results of the first of the several examinations conflict somewhat with those of the subsequent examinations. The apparent inconsistency may be readily explained. Auscultation with the stethoscope in certain portions of the right infra-clavicular region, that is, over the portions of lung solidified, would, of course, give a high pitch of sound. That the low pitched respiration, denoting excavations, was not discovered at the first exploration, may have been because the whole of the infra-clavicular region was not carefully examined, or the cavities may have been filled with fluid secretions, and therefore the conditions for the cavernous respiration were not present.

Obs. 2.—Jan. 26. James Bell. Hospital patient. On the left side, marked relative dulness on percussion at the summit.

Over the right side, at the summit, the respiration is evidently supplementary, the murmur being intense, but vesicular, without any sound of expiration. The resonance on percussion on this side is quite clear. The pitch of respiration, however, is rather high.

Over the left chest, at the summit, the respiratory sound is lower in pitch than over the right side. The pitch, however, is not uniform over the whole of the summit of the left side. Toward the acromial angle of the infra-clavicular region, over a space of about the dimensions of the thoracic extremity of the stethocope, the pitch is low. At a short distance, in a direction toward the sternum, the pitch is notably higher. Over the latter space, compared with the former, the sound on percussion is in a marked degree dull. The resonance over the former space seems to me somewhat tympantic in character, and the tone is

communicated through the stethoscope with a resonance approaching to pectoriloquy.

On applying the ear immediately over the summit of the left chest, the pitch is lower than on the right side.

The history of this case shows copious muco-purulent expectoration.

Obs. 3. *With Autopsy.*—Feb. 2. O'Donnell. Hospital patient. On the right side the resonance is relatively dull in a marked degree. On immediate auscultation, the pitch of respiration is found to be notably elevated, with a prolonged expiration, the latter being quite high in pitch. About an inch and a half, on the right side, below the clavicle, toward the acromial angle the pitch is low, devoid of vesicular quality. At the same distance below the clavicle, toward the sternal extremity the pitch is high.

Feb. 13. On examination of this patient to-day, I observed at the summit of the right chest, during the first part of the act of respiration, a tubular respiration loud and high in pitch; and during the latter part of the inspiration, the inspiration abruptly became low, the blowing character being still preserved. The contrast between the two portions of the inspiration was striking. There is a feeble sound of expiration which is low in pitch.

This case terminated fatally a few days after, and the following statement of the morbid appearances of the lung is furnished by Dr. John C. Dalton, Jr.:—

"The right lung is closely confined by old and very firm adhesions throughout its upper portion. Whole of upper and most of middle lobe destitute of crepitation, and solidified by gray (tubercular) infiltration. Lower lobe full of air, but shows also many small, well-defined cheesy and softened yellowish tubercles. Upper lobe toward median line, solid, or with only one or two small cavities. Toward sternal portion there is a large superfical cavity, with irregular walls, capable of holding an egg or more, containing a few drachms of pure pus, and lined throughout by a grayish, semi-transparent false membrane, about a line and a half in thickness; easily scraped off by the edge of the scalpel. This cavity communicates with other smaller ones at posterior part of upper lobe, and also with a branch of the right bronchus about the size of a goose-quill.

"The left lung shows many small, yellowish, cheesy, and

softened tubercles, and one cavity at its posterior part nearly or quite empty, and exhibiting the appearance of having been for some time inactive. But very little gray infiltration in the left lung, and it is altogether much less diseased than the right. No effusion in either pleural cavity. (Signed) J. C. D."

Remarks.—The low pitched sound of respiration, with the expiratory sound lower than the inspiration heard over a circumscribed space in the right infra-clavicular region, was doubtless due to the cavity discovered in the lung on this side at the autopsy. The high pitched sound in a direction from the cavity toward the sternum was produced by the solidified lung. The latter sound, in other words, was bronchial, and the former cavernous. The combination of the bronchial and cavernous respiration in the act of inspiration is an interesting point in this case, the former due to the current of air in the bronchial tube passing through solidfied lung to communicate with the excavation, and the latter produced by the entrance of air within the cavity.

The examinations were limited to the anterior part of the chest, owing to the great feebleness of the patient. A careful exploration over the posterior summit of the chest, on the left side, might have led to the pitch variations incident to the cavity in the posterior part of the left lung.

Obs. 4—Feb. 22. John Jervis. Hospital patient. On immediate auscultation, the pitch of respiration is found to be higher in the right infra-clavicular region. The respiration is short and non-vesicular. On immediate auscultation, over a space near the sterno-clavicular junction, the pitch is low, and the sound non vesicular. A sound of expiration is not sufficiently appreciable to determine the pitch. The sound over the space just referred to contrasts strongly with the high pitched bronchial respiration over the sterno-clavicular junction. The chest is depressed on the right side in the infra and post-clavicular regions. It expands less in these situations, on inspiration, than on the left side.

On percussion, the right infra clavicular region is found to be relatively dull. Over the space referred to, the

sound is lower in pitch than over surrounding portions, and somewhat tympanitic. Over this space there is forcible vocal resonance, but not marked pectoriloquy.

Over the right mammary region there exists marked relative dulness on percussion, almost amounting to flatness. There is not much resonance, but comparatively a greater degree on the left side. The respiration on both sides over this region is feeble, but on the right side notably higher in pitch.

Remarks.—The disease in this case had existed for about six months. The respirations were 32, and the pulse 128. The comparative lowness of the pitch of respiration, with the absence of the vesicular quality, over a space in the right infra-clavicular region, is presumed to denote the existence of a cavity in that situation. In other words, the respiration in this situation is cavernous.

In this case, at my request, Mr. Bowen, medical student, examined and recorded the results, which were found to correspond with mine.

Obs. 5.—March 5. Carlos Aberd. Hospital patient. This patient entered in the last stage of the disease, and was so greatly prostrated that the physical examination was very cursory. Death occurred the second or third day after his admission, and an autopsy was not practicable. It is simply noted, that on the right side, at the summit of the chest, before and behind the respiration is non-vesicular, low in pitch, with an expiration lower in pitch than the inspiration.

Obs. 6.—Feb. 26. James Kelly. Hospital patient. The examination for pitch is difficult on the left side, owing to the presence of râles. There exists marked relative dulness on percussion over the left side, at the summit of the chest anteriorly and posteriorly. On the right side, posteriorly, the respiration over the scapula is high in pitch, with a prolonged expiration higher in pitch than the inspiration.

On the left side (the side in which relative dulness exists) over the scapula the sound of respiration is lower in pitch, and devoid of the vesicular quality. An expiration is present lower in pitch than the inspiration.

In the right infra-clavicular region toward the sternal

boundary, the pitch is high, and the sound loud, without an appreciable expiration. Toward the acromial border, in the same region, the pitch is low, with an expiration lower than the inspiration. The sound here, however, has the vesicular quality. Percussion over the half of this region in the direction of the sternum is dull, while over the other half it is clear.

In the left infra-clavicular region, râles obscure the pitch save over a space near the sternum. Here the pitch is low, with an expiration lower than the inspiration.

Obs. 7, *with Autopsy.*—Jan 27. This case is included among the cases of tuberculosis advanced to the stage of excavation. It was not, however, really a case of that description. The existence of a cavity was predicated upon certain pitch characters, and other signs, but the autopsy proved the diagnosis to be incorrect. Candor requires the observation to be given in connection with the post-mortem appearances. The case is interesting and instructive, showing circumstances which were perhaps well culculated to lead to error of diagnosis. It also illustrates, incidentally, certain points connected with the present subject.

James Caytor, aged 5 years. Hospital patient. On percussion, the resonance in the left infra clavicular region appears to be somewhat tympanitic, but the pitch of resonance is distinctly higher than on the right side. There is a distinct *bruit de pot félé* in the left infra-clavicular region. The pitch of respiration is distinctly lower in the left infra-clavic ılar region than in the right. There is a feeble expiratory sound on this side, not uniformly, but occasionally appreciable. The pitch is lower in the above situation than on the same side over the mammary region.

Over the right infra-clavicular region, the pitch of respiration is higher than over the left mammary region. Pectoriloquy is not present. In the left infra clavicular region the second rib yields with very little resistance to pressure, in this respect contrasting strongly with the resistance over the corresponding region on the right side.

Jan. 29. Confirmed the foregoing facts. The *bruit de pot félé* is distinct.

The case terminated fatally early in the present month (March,) and the following statement of the morbid ap-

pearances of the lung is furnished by Dr. John C Dalton, Jr.:

"The pleuræ of both lungs were rather plentifully sprinkled with tubercular granulations—no effusion or adhesion. There were also a few small tuberculous masses in substance of middle and lower lobe of right lung, yellowish and firm in consistence; no cavities and no softened tubercles. The largest collection of tubercle was just behind the root of the left bronchus, firm and cheesy—about the size of a small English walnut. Bronchial glands slightly tuberculous. Bronchi of natural relative size and length. There was considerable redness of mucous membrane of the left bronchus, with three or four shallow white ulcerations. No tuberculous deposit perceptible at base or in neighborhood of these ulcerations. No similar affection of right bronchus. Apices of lungs nearly or quite free from tubercle. No pneumonia anywhere. (Signed) J. C. D."

Remarks.—A cavity was sought for in the left infra-clavicular region, supposed to be due to excavated tubercle or pouch dilatation of the bronchus in this situation. This expectation was based on the physical signs above mentioned, viz: the low pitch of respiration, the tympanitic resonance on percussion, and the *bruit de pot fêlé*. The diagnosis was formed with considerable hesitation, because the rational system did not denote extensive tuberculosis advanced to the stage of excavation. The respirations were not accelerated nor labored. There did not appear to be much expectoration. The age of the patient militated against the supposition. The patient was reduced to marasmus, and died by asthenia, evidently from defective assimilation. In spite of these circumstances, the pitch characters, and the cracked-pot, tympanitic resonance, were thought to denote the existence of a cavity.

The source of the error is intelligible. The thoracic walls were very thin, and the respiratory sound was largely developed. The respiration on the right side at the summit, was higher in pitch from the predominance of the bronchial element as a natural disparity. I was not, at that time, so well prepared to attribute a disparity so strongly marked to a normal difference, as since the ex-

amination of a number of healthy chests with reference to this among other points. The relative lowness of the pitch on the left side did not arise from a depression on this side, but because the normal elevation of pitch on the right side was in this instance strikingly marked. Instead of a cavity, there existed in the right lung a solid tuberculous deposit of about the size of an English walnut. This was situated directly behind the left bronchus. In this situation it would not evidently be expected to raise the pitch of the bronchial respiration in front on this side, and by making some pressure on the tube it would be likely to render the sound less developed.

How is the *bruit de pot félé* to be accounted for? It is well known that this modification of tympanitic resonance does not universally require a cavity for its production. It has been observed in the second stage of pneumonitis. Without discussing the mode of its production as a rule in cases in which cavity does not exist, I will offer an explanation of its occurrence in this particular case. It will be seen by reference to the observation, that the second rib on the left side was remarkably yielding to pressure. The solid tuberculous mass behind the bronchus furnished a point of resistance, or, as it were, a fulcrum. On percussion, the ribs and the lung anteriorly to the bronchus yield readily, and the tuberculous deposit formed a kind of anvil causing the air in the bronchi to be expelled in such a way, and with sufficient force to yield the cracked pot sound. Of the existence of this sound in the case there was no doubt. While the patient was in the hospital, it was frequently demonstrated by myself and others as a good illustration of the sign.*

I can only account for the fact that the pitch at the summit of the left chest appeared lower than over the mammary region by snpposing that the presence of the small tuberculous masses in the lower lobe on this side, exalted the pitch more than the deposits in the upper lobe. Why this should be so it is not easy to understand. It is possible that the comparison, in these situations, was not made with sufficient care.

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* Since this was written, a child admitted into the hospital, with affection of the mesenteric glands, reduced to extreme emaciation, but without cough or other symptoms of pulmonary affection, presents a very distinct *bruit de pot fele* on the left side.

This case furnished an interesting illustration of the effect of a moderate tuberculous mass, surrounded by vesicles, in modifying the pitch of resonance on percussion. The pitch of sound on percussion, in the left infra-clavicular region, was distinctly raised.

4 *Arrested Tubercle.*

Obs. 1.—Jan. 27. Martin Welch. Hospital patient. This patient presented, a year ago, the evidence, physical and rational, of small tuberculous deposit. The disease, in the mean time, has apparently made no progress. He remains in the hospital as a porter. Some cough and moderate expectoration continue. He has not lost in weight during the year, and his aspect is not notably morbid.

On auscultation, the respiration at the summit of the right side is relatively feeble, and the pitch is elevated. There is no sound of expiration, nor does the respiration present any abnormal characters, save feebleness and elevation of pitch.

On percussion, after obtaining the foregoing results, I find slight relative dulness in the right infra-clavicular region.

Obs. 2.—March 4. The subject of this observation is a professional friend of the writer. In 1844 he suffered for several consecutive months from cough with moderate expectoration. Hæmoptysis occurred during this period once. His weight was considerably diminished. He gradually recovered without medical treatment, and with the exception of a cough, which lasted for two months in 1849, he has enjoyed good health, being entirely free from any symptoms of pulmonary disease.

There is distinct elevation of the pitch of resonance on percussion at the summit of the chest on the left side. The respiration in this situation is slightly elevated in pitch, and the vesicular quality is somewhat less developed than on the right side.

Slight vocal resonance exists on both sides, in about an equal degree.

Remarks.—The variations in resonance and respiration being on the left side, are, on this account, the more significant of changes, probably due to arrested tubercle.

Practice in Philadelphia.—From the Philadelphia Medical and surgical Journal, the following extract is taken:

"Two-thirds of the practice of medicine in Philadelphia, even among those who pay for everything else, is done gratis; and not unfrequently insult is added to injury. This is due to the crowded state of the profession, and to the *mock charity* inculcated by many of the public teachers. The average fee for medical attendance, *paid*, does not exceed *twenty-five cents* a visit."

Perhaps some one, more familiar with the phases of professional income in Boston than ourselves, may favor us with a statement of the profits of practice here. Some certainly have large incomes; while others, whose merits and qualifications cannot be questioned, have none at all. *Boston Med. Jour.*

Friendly Injury.—In the Bee, of this city, the following statement appeared the past week:—"A suit was lately brought in Barnstable county, which grew out of the simple act of shaking hands. The defendant, it appears, seized the hand of the plaintiff to shake it, and in doing so, he grasped it so tightly as to crush the bones and thereby cripple it forever. The hand became ulcerated, and many of the bones have been discharged from the wound. The result of the trial is not yet heard."—*Ibid.*

Mineral Springs.—Dr. John Bell, [Philadelphia,] who is preparing a work on mineral springs, more especially on those of the United States, is desirous of procuring, at an early day, all accessible information on the subject. With this view he requests his professional brethren to transmit to him all the facts in their possession which may throw light on the chemical composition and curative powers of the waters of the springs in their respective neighborhoods.

Proprietors of these waters would oblige by sending to Dr. Bell authenticated accounts on these points, and also of the topography of the springs, and the roads by which they are approached.—*Ib.*

On the use of Manganese as an Adjuvant to Iron.—M. Pétrequin quotes various authors to prove that manganese is a normal constituent of animal and vegetable tissues; and believes that wherever iron is present in appreciable quantity, manganese coexists with it. Hence iron alone will not always succeed in blood diseases. M. Pétrequin has observed many cases of chlorosis, which have resisted iron as obstinately as anæmia connected with cancer or organic degeneration. Other cases again, after deriving a certain amount of benefit from iron, remain stationary. Others again appear cured by iron, but the cure is not permanent. The remedy required in these cases, M. Pétrequin finds to be manganese. He does not give it or iron alone; but combines them.

It is espesially in *diseases of the blood* that ferro-manganic medicines are useful. They have a special action on the vascular apparatus, on the formation of the blood, and on the circulating fluid itself. They do not act merely as tonics or astringents; but are regenerators of the blood. They have succeeded admirably in anæmia following hemorrhage, operations, polypi, metrorrhagia, &c., also in the chlorosis attending puberty, which is a more common disease than is generally supposed, and occurs even in males. M. Pétrequin has also frequently found the combination of iron with manganese of benefit in the diseases of women at the critical period. He has often seen in these subjects, *metrorrhagia*, accompanied with an aspect of the surface which would lead to the suspicion of organic uterine disease: the hemorrhage, however, was but a complication, and the patients, apparently in a hopeless state, have recovered under the use of ferro manganic preparations, conjoined with tonics and ergotine.

In *amenorrhœa* and *dysmenorrhœa*, the patients often imagine that they require to be bled; but care must generally be taken not to comply with this request. M. Pétrequin has more than once seen cases of amenorrhœa with severe chlorosis, in which it has not been desirable to hasten the appearance of the catemenia—the consequent loss of blood aggravating the disease. The general state of the health must here be carefully attended to. Œdema of the lower limbs sometimes occurs in these cases; but it is a less severe complication than when it attends metror-

rhagia. It often disappears, as the patient recovers, under the use of iron and manganese.

These medicines are no less efficacious in the treatment of *anæmia* resulting from prolonged intermittent fevers, prolonged suppuration, strumus, syphilitic, or cancerous affections, phthisis, &c. Pills and the syrup of iodide of manganese and iron are preferable in these cases.

In all these cases, the ferro manganic preparations do not merely act on the stomach and the nervous system, but they are absorbed and assist in the formation of hæmatosine and new blood globules, so as to restore the blood to its normal condition. Their effect in this way is greater than that of iron alone.

In the *functional affections of the heart* connected with chlorosis and anæmia, and which must not be mistaken for organic disease, a combination of iron and manganese with digitalis and other moderators of the heart's action is advantageous. The same remark applies to the *functional disorders of the lungs*, attending the same constitutional states. *Disordered states of the nervous system* are intimately connected with those of the blood. M. Pétrequin has found that the ferro manganic preparations succeed well in these, even though uncomplicated with chlorosis. He, as well as M. Gubian, has observed that iron is here better tolerated when combined with manganese. He has also seen benefit from the use of iron with manganese in many cases of *dyspepsia*, *gastralgia*, *gastro-enteralgia*. Nervous affections of the digestive organs are often the result of chlorosis; and where stomachics and cinchona have failed, iron has often been found (especially the carbonate, by some English physicians) to be of service. Gastrodynia complicating chlorosis has often yielded to the use of ferro manganiferous water; and to pills of carbonate of iron and manganese.

In *nervous affections connected with exhaustion* from venereal excesses, onanism, rapid growth, &c., as well as in leucorrhea, diabetes, &c., M. Pétrequin has a high opinion of these medicines. He is continuing his researches on their action in certain cases of sterility from asthenia and in some hyposthenic affections of the scalp, such as early baldness, alopecia, &c.

M. Petrequin has confined his observations to a limited number of the ferro-manganic prepartions; and has made many observations before publishing the formulæ which

he finds most useful. Having found even at an early period, that the medicines were liable to adulteration, he has availed himself of the assistance of competent pharmaceutists. Since the publication of his first memoir, in 1849, these medicines have been extensively used in the south of France and in foreign countries.

The formulæ are few and correspond to the preparations of iron generally used in France. They are; 1. *Pills* of carbonate of iron and manganese, or of iodide; 2. *Lozenges* of lactate of iron and manganese; 3. *Syrups* of lactate or of iodide of iron and manganese; 4. Ferro-manganic *Chocolate;* 5. *Effervescing solution* of iron and manganese.

It has been observed that manganese not only preserves water, but purifies that which has undergone change—(Martin-Lauzer.) Ferro-manganic waters (of which there are many in France and other parts of the continent) can be preserved and carried to a distance;—which cannot generally be done with simple ferruginous waters.

M. Pétrequin commences by giving a powder of iron and manganese, with some vinous drink; he then administers two pills daily, one before breakfast and one before dinner, replacing them soon by the lozenges. The syrups and chocolate complete the treatment. He gives the medicines at meal time. The syrup he gives before breakfast, in doses of a tea-spoonful; and he finds it useful to administer directly after it some infusion of centaury, or of chamomile flowers and orange.

Large doses are unnecessary and useless; for they are liable to produce irritation of the stomach and exhaustion of the nervous system; and the reparation of the blood is slow and progressive, and cannot, even were it desirable, be effected rapidly. Besides the iron and the manganese are not absorbed in any greater quantity, if large doses are given.—*Dublin Med. Press.*

On the Internal Administration of Chloroform in Delirium Tremens. By Richard G. H. Butcher, F. R. C. S. I., Surgeon to Mercer's Hospital, &c.—The patient, Wm. Magrath, aged 26, a powerful young man, by trade, a wine porter, was admitted by the author, into Mercer's Hospital, June 25th, 1852. When admitted, four days

had elapsed from the time of his giving up the stimulus, and he had no sleep during that period. His countenance was particularly anxious, with a wild expression: the pathognomonic symptom, tremor of the tongue and hands fully established. His speech was hurried and uneven; he was quite irrational and wild; pulse 120; surface of the body hot and burning, while his face was covered with perspiration, and his hair drenched in sweat. He was put into bed but would nat remain quiet; got up and kept constantly walking up and down the ward and corridor. He was ordered two grains of calomel and a grain of opium in pill, to be taken every third hour. He had taken three, but each was vomited almost immediately after being swallowed. A draught containing one grain of morphine, two drops of creosote, and an ounce of camphor mixture, to be given every third hour, was next tried, but this was likewise rejected. If the patient only took a sup of cold water to moisten his parched mouth and lips, it was instantly vomited.

On the following morning, the 20th, his condition was a great deal worse, and the case now assumed a serious aspect. From the irritability of the stomach, opium in any form could not be got to rest upon it. As for the idea of administering repeated small opiate enemata in this powerful, restless, and uncontrollable young man, the practicability of it could not be entertained for a moment. From the satisfactory issue of two cases, reported in the *American Journal of Medical Science* for January, 1852, the same practice was determined on—the internal administration of chloroform.

At ten o'clock this morning, (26th,) one drachm of pure chloroform in two ounces and a half of water was administered. In an hour after swallowing it, the patient became comparatively tranquil, and could be persuaded to lie in bed.

Eleven o'clock:—He began to get drowsey, and slept for periods of from ten to twelve minutes at a time. At a quarter before one o'clock, he became fully affected by the medicine, and fell into a quiet steady sleep; and on visiting him at two and four p. m. he was still in a profound sleep, and continued so until seven in the evening. During this long sleep of six hours, he was calm and quiet; his pulse fell from 120, which it was in the morn-

ing, to 96, at which it remained; his respirations were between 16 and twenty in the minute, and not louder than natural; the temperature of the body was exalted. All along heat was maintained to the feet, and a pure current of air circulating around him, the windows being kept open. On his awakening, he was nearly or quite sensible, and advantage was taken of this pause to administer a full stimulant cathartic, consisting of six grains of calomel and ten grains of camphor, not only with the intention of freeing the bowels of accumulated matter, but likewise to guard against congestion of the brain. Orders were left in case he should not sleep before ten, to administer half a drachm of chloroform in two ounces of camphor mixture.

27th, ten A. M.—The patient went to sleep almost immediately after swallowing the bolus on last evening, so he did not require the chloroform draught. His bowels were opened three times very freely during the night, and his condition is in every way greatly improved. He is quite rational, and answers every question sensibly; his pulse 96, considerable volume; skin cool; after being interrogated, he quietly turned on his side and went to sleep.

Three P. M.—His bowels have been several times opened since morning, yet his pulse has risen to 110; the temperature of his body is also increased; he is hot and burning; altogether he is excited, and the fear of horrible objects around him has returned. On the presence of those symptoms the chloroform draught was at once repeated. Shortly after, he took a large drink of tea, which was inadvertantly left beside his bed, which produced vomiting immediately.

Nine P. M.—Since the last visit, the patient has slept at short intervals, for one and two hours at a time; pulse still up to 110. Ordered the chloroform draught, one drachm to two ounces and a half of the camphor mixture, to be repeated.

28th:—After the patient had taken the draught last night, he fell into a quiet sleep, which continued uninterrupted until eight o'clock this morning. He awoke quite collected and rational; his pulse 80; skin cool; his tongue and extremities quite free from tremor, and he feels in every respect well; his appetite has returned, and all food

is retained on the stomach. Ordered a grain of morphia in an ounce of camphor mixture, to be given at night.

29th:—This morning the patient is quite restored; he is sitting up eating his breakfast heartily in bed; in short, he is quite convalescent, and only requires a little nourishment to remove the debility consequent upon so severe a struggle.

In reference to the administration of chloroform in the foregoing case remarks the author in conclusion, there is one point which solicits our closest attention, namely: the remarkable lowering of the pulse, when the perfect effect of the medicine was produced; the pulse, in fact, might form the index to direct the practitioner as to the propriety of a repetition of the dose. Again as a precautionary measure, I consider it desirable to keep the heat to the feet, and a current of pure air circulating around the bed and through the apartment in which the patient lies.—*Dublin Medical Press.*

Diarrhœa Successfully Treated by Sulphuric Acid.—Although Sulphuric Acid was recommended in passive diarrhœa, by the late Anthony Todd Thompson, in the Edition of his Dispensatory, published in 1837. I believe attention was only directed to it some twelve or fifteen months ago, by a writer in one of the Medical Periodicals; and according to received notions, no remedy would be less likely to check an attack of this disease, for the state of the tongue, the sour taste in the mouth, and the acid matters rejected from the stomach, would seem to contra-indicate its use, and few practitioners venture to have recourse to any other remedies than the old ones of calomel and opium, or astringents and absorbents; which correct the acidity of the primæ viæ and improve the character of the secretions. I am induced to relate a few cases cured by this remedy, as I believe it will be found to be very efficacious in the treatment of this often troublesome disease.

Case 1st. James McCrae, aged 42, labourer, after exposure to wet, was attacked during the night of 22d June, with diarrhœa, succeeded after a time with severe griping pains in his bowels, accompanied with vomiting. Early

in the morning, he procured from a neighboring apothecary shop, an ounce of castor oil, with 30 drops of laudanum, which he retained upwards of half an hour, when it was vomited up with a large quantity of very acid liquid, from which he felt much relieved for a few hours; when towards the middle of the day, all the symptoms having returned, with the same violence as in the morning, he came under my care, and I resolved to try the effect of Sulphuric Acid. I therefore, ordered a mixture containing ℥ss. of diluted Sulphuric Acid, with ℥viiss of water. ℥1 to be taken every two hours. The first dose was vomited up within five minutes, but on taking the second which he did immediately on the rejection of the first, he had no return either of vomiting or griping pains, and the next dose checked the purging; he had no recurrence of it from that time, and the following day returned to his work as well as ever.

Case 2nd. Occurred a few days after the above, and was that of a lady who had just recovered from her accouchment, when she was attacked with nearly the same symptoms as the previous case; and was, when I first saw her, much exhausted from the enormous evacuations. I immediately ordered the same medicine, and two doses checked all the symptoms, although she took a third dose, as a matter of precaution, and now speaks to all her friends, of the acid mixture, as a specific in diarrhœa.

Cases 3d and 4th. Were in children—one two years old, and the other five; both were cured in two days, with the Sulphuric Acid, of course in much smaller doses, and sweetened at the time of administering it. I shall not detail many other cases, that have fallen under my care since these, but they have been of sufficient number to give me full opportunities of testing the value of sulphuric Acid in diarrhœa, and from the experience I have had in its use, I can confidently speak of its curative power in such cases.—*Canada Med. Jour.*

On the Proportion of the Subjects bitten by Mad Animals, who become affected with Hydrophobia. By Professor Renault.—M. Renault, Clinical Professor at the Veterinary School at Alfort, has recently presented to the Acade-

my a valuable Report, adverse to the claim again recently set up for the prophylactic power of mercurial inunction in hydrophobia. As this claim has been over and over again refuted, we should not have adverted to the subject, but for the valuable incidental matter introduced by the Professor into his Report. He observes, that before we can receive the numerous cases which have been published of the preservative power of mercurial salivation, it is necessary,—1. That it should be placed beyond all doubt that the animal inflicting the bite was really mad; and that all the persons supposed to have been preserved have really been exposed to the infection. On examining the histories of these cases, however, such proof is quite defective, as in some of those related—e.g., by Ehrmann and Audry, the persons had not been bitten at all, but had merely lain or drank with those who had, or had wiped away their saliva.—2. Next, when persons have been really bitten, and the animal has been really mad, we must be satisfied that the poison has been deposited in the wound. But numbers of the persons referred to have been bitten through their clothes, and every one knows how small a proportion of such acquire hydrophobia, even when no treatment at all has been employed.—3. But even when the poison has been duly deposited in the wound, to admit the preservative power of the mercury, we must allow that all such persons would necessarily suffer from hydrophobia if left to themselves. Numbers of cases contradictory of this are, however, on record. But although all careful observers admit this, the *proportion* of such as escape has never been duly investigated; and the subject being one of the highest interest, M. Renault takes the opportunity of communicating the results of the investigations he has been conducting upon it at Alfort since 1828.

To prevent confusion, he arranges the cases he has collected in two categories. (A.) Cases of dogs or other animals accidentally bitten by others, either mad or supposed to be so, and sent by the police to Alfort, to remain under inspection. Of 224 dogs so brought, between 1827 and 1837, which continued under observation for more than two months, without undergoing treatment, 74 or nearly one-third became mad, and 130 or two-thirds exhibited no symptoms. It is evident, however, that these

cases do not afford any measure of the activity of the virus; for the dog that caused the bite may not always have been mad, the bites could not always be verified, and the hair of the animal may have prevented the poison from penetrating.

(B.) For this reason, another series of facts is adduced. From 1830 to the present time, certain dogs known as really mad have been made to bite, at the Clinical School, other dogs or herbivora in portions of the surface of delicate structure and devoid of hair, or inoculation has been performed with some of their saliva, collected during the height of the paroxysm. Of 99 dogs, horses, and sheep, so treated, 67 became mad, and 32 continued under observation more than 100 days without any symptom exhibiting itself. Thus, in this category, in which every circumstance favorable to infection was secured no less than one-third of the animals escaped, without undergoing any treatment whatever.

Examining the experience of other clinical professors, M. Renault says, that Professor Rey, of Lyons, has found that among animals who were accidentally bitten in the streets, and then placed under *surveillance*, 1 to 5 of the dogs, and 1 to 4 of the horses, became mad. Of those bitten or inoculated experimentally, 2 to 3 became mad. Of 16 animals accidentally bitten at Toulouse, 5 became mad. Professor Hertwig, of Berlin, states, that of 137 dogs accidentally bitten, 16 only became mad, 121 remained uninjured; while of 25 experimentally infected 10 became mad, and 15 did not. Thus, in both the categories, the proportion affected was sensibly less in Berlin than in France, whether this be owing to climate or other cause.

Thus, taking things at the worst, it results from these observations, made at different epochs, that two-thirds of the animals accidentally bitten, and one-third of those artificially infected, escape.

Still, it must not be supposed that these *mean results* of a great number of observations can be applied when speaking of the bite of a particular dog; for M. Renault has repeatedly observed, that while one dog, evidently mad, bites several others, and only one-sixth or one-seventh of these shall suffer, the virus conveyed from another dog, to all appearance in just the same condition, will infect nearly every animal (five-sixths or six-sevenths.)

Moreover, it is generally believed that the bites of *mad wolves* are oftener followed by hydrophobia than are those of dogs. Of 254 examples of such bites, the histories of which M. Renault has been able to collect in authors, in 164, or nearly two-thirds, hydrophobia followed—the proportion for accidental bites by mad dogs being only one-third. Whether this depends upon the fact, that in the wolf the rabies is oftener spontaneous, or upon the more remarkable one, that this animal almost always bites its victim in the face, neck, or head, is uncertain.—*Bull. de l'Acad.*

[Hydrophobia has recently been very prevalent in France, so that something like a panic has been produced and the journals teem with accounts of supposed remedies. The police have made a terrible onslaught on all wandering dogs; and the exemption of London from the disease, since the prohibition of the employment of dogs as beasts of burden, has been adverted to. It would be desirable to ascertain how far this exemption has extended beyond the metropolis, where alone the dog-act is in operation. How much remains to be cleared up in the history of *rabies canina*, is seen by a communication from Clot-Bey (*L'Union Med.* 1852, No. 94,) in which he states, that while dogs exist in such vast numbers in various parts of Asia and Africa, hydrophobia is of the rarest occurrence. In Egypt where he lived during twenty-five years, he never heard of a case, although the dogs wander abont the towns and villages in vast numbers, under a burning sun panting for breath, ill-fed, and often deprived of water. He thinks that much may be due to the promiscuous intercourse which their entire liberty allows to these animals. In Greece, on the other hand, the disease is excessively prevalent.—*British and Foreign Medico-Chirurgical Rev.*

On the Induction of Abortion in the Vomiting of Pregnant Women. By MM. Dubois and Stoltz.—During a recent discussion at the *Academie de Medicine*, M. P. Dubois stated the results of his experience in relation to obstinate vomiting in pregnancy. In proof that this is oftener a more dangerous occurrence than is usually supposed, he stated, that in the course of thirteen years he had met with twen-

ty cases in which it has proved fatal. That obstinate vomiting is but the exaggeration of the natural sympathetic vomiting of pregnancy, and not due to any special lesion, is proved by the facts, that at the autopsies nothing is found, and that when the process of gestation becomes arrested, whether spontaneously or artifically, the vomiting is ordinarily put an end to, although the woman may not be delivered until several days after, of a dead child, and may yet die of the effects of what she has already undergone. M. Dubois refers to several cases in which the women, apparently at the point of death, were saved by the *spontaneous* death of the fœtus, this being expelled only sometime afterwards. In respect to the question of how far *artificial* interference is attended with the same result, he furnishes notes of the four cases in which he has employed it. Three of these died and one recovered—this last being added to other cases on record, making the number of recoveries he is aware of certainly 7, and probably 9. In all the cases, however, whether fortunate or not, the vomiting was suspended by the operation. The difficulty is, indeed, to fix the *period* at which this should be resorted to; for it is the natural desire to delay this as long as possible, which leads to the fatal result—the woman dying, in fact, from the exhaustion and prolonged abstinence which the vomiting has induced, prior to the operations for arresting it being undertaken. M. Dubois lays it down as a rule, never to perform it when the signs of extreme exhaustion are present, as evidenced by considerable loss of vision, cephalalgia, comatose somnolence, and disorder of the intellectual faculties. On the other hand, we should also abstain from operating when the vomiting, though violent and frequent, still allows of some aliment being retained; when the patient, though wasted and feeble, is not obliged to keep her bed; when the suffering has not yet induced intense and continuous febrile action; and when other means still remain untried. In the first case, we should not save our patient, but perhaps accelerate her death, and bring discredit on the operation; while, in the other, we should sacrifice a pregnancy that might have gone on to the full time. It is, therefore, the intermediate period that should be chosen, and this is characterized by the following signs:—1. Almost incessant vomiting, by which all ali-

mentary substances, and sometimes the smallest drop of water, are rejected.—2. Wasting and debility, which condemn the patient to absolute rest.—3. Syncope, brought on by the least movement, or mental emotion.—4. A marked change in the features.—5. Severe and continuous febrile action.—6. An excessive and penetrating acidity of the breath.—7. The failure of all other means. But even within this period, which is of variable duration, the opportune moment must be chosen. This seems to have arrived, when the inefficacy of the most approved treatment has been proved, when fever is found to persist, and the debility and wasting of the patient are making sensible progress. The attendant should now declare that the operation is indicated, leaving to the patient and her friends the duty of deciding upon its adoption.

Professor Stoltz, of Strasburg, has published a highly interesting communication upon this subject, in which he also states his belief, that vomiting during pregnancy is much oftener fatal than is usually supposed. He relates four cases, from among others, that have come under his own notice. In three of these, death occurred, and life was saved by the operation in the fourth, although the case seemed hopeless. M. Stoltz lays great stress upon the operation being performed *in good time* because if we wait until the effects of the sympathetic reaction constitute in themselves a serious disease, the evacuation of the womb does not induce a cessation of these, and may, in certain cases, even hasten death—life, so to say, hanging upon a thread. It is undoubtedly difficult to say, *when* the moment has arrived that we can no longer hope for benefit from nature or therapeutical agents. But may not the same observation be made with regard to many important surgical operations? It is true that neither spontaneous nor artificial abortion always saves life in these cases; but the former usually occurs only when the woman's powers are hopelessly exhausted, and the pain and discharge consequent on the delivery may expedite her end—the same result not being unfrequently seen in fever. Some practitioners have expressed themselves very feelingly against sacrificing the child in these cases; but there is a great inconsistency on the part of those who do so, and who still advocate the operation in the case of narrow pelvis. A woman who has undergone artificial

abortion for obstinate vomiting, may hereafter (and these cases mostly occur in primiparæ) give birth to a living child, which can never be the case in one who has so narrow a pelvis as to call for the induction of abortion rather than of premature labor.—*Bull. de l'Acad. Gazette Med.* —*Ibid.*

On a Case of Poisoning from swallowing Chloroform, and on its Administration in Lead Colic. By Dr. Aran.—This occurred in a case of severe lead colic, for which the chloroform was given internally with advantage, when on the eighth day of treatment, the patient by mistake drank a draught from the bottle containing the chloroform. The burning sensation produced informing him of his error, he drank large quantities of water, and made ineffectual attempts to vomit. He was found a few minutes afterwards with his eyes shining, his features animated, singing and talking incoherently, and unable to recognize those about him. There were various convulsive movements, and the skin was insensible to pinching, pricking, &c. The pupils acted naturally, but the power of vision seemed gone. Pulse between seventy and eighty. In twenty or thirty minutes he fell into a sleep, which became very deep, and was accompanied by anæsthesia of surface and complete relaxation of limbs, the pupils and respiration continuing normal. Leeches were applied behind the ears, and purgative enemata given, and in a few hours he rose like a drunken man, to fall into a sound sleep again. Next day, he could remember nothing of what occurred, and the ill effects gradually wore off. As near as could be guessed, the man must have drank between eight and ten drachms of chloroform; and the innocuity of so large a dose can only be explained by the rapid elimination which Snow and others have proved that chloroform undergoes. M. Aran thinks that in similar cases, a preferable treatment would be the administration of strong coffee, and the application of cold to the head and sinapisms to the feet—means whose efficacy is known in cases of poisoning by alcohol, opium, ether, &c.

M. Aran speaks in warm terms of the internal use of chloroform in hysteria, spasmodic colic, lead colic, &c.,

given in increasing doses from 20 to 150 drops in the twenty-four hours. Not only has no accident occurred to any of the very numerous cases in which he has given it, but the physiological effects have at most in some cases resembled the transient intoxication induced by champagne. He has compared its efficacy in *lead colic* with that of the usual remedies, especially purgatives and alum, in a great number of cases. He does not deny the efficacy of *purgatives*, and thinks that they should be always employed in conjunction; but when given alone, only very powerful ones are efficacious, and then only temporarily so. He thinks even less favorably of *alum*, as he has found it very slow in operation, and of doubtful efficacy, beyond enabling mild aperients to act where drastics would otherwise have been required. *Chloroform* acts as opium or belladonna, by relieving the spasm, which constitutes so important an element in the disease. It has this advantage, that it may be given in considerable doses, without the incessant watching required by the other two, owing to its rapid elimination. It should not, any more than they, be employed alone, but in conjunction with means for ridding the economy of the lead, as sulphur and vapour baths, &c. The chloroform is to be applied locally, and administered in a mixture, in doses of from fifteen to twenty drops morning and evening, and as much in a glyster, increasing this quantity if required.—*Bull. de Therap.—Ibid.*

THE WESTERN JOURNAL.

THIRD SERIES.—VOL. X.—NO. VI.

LOUISVILLE, DECEMBER 1, 1852.

UNIVERSITY OF LOUISVILLE.

The number of Medical students in the University of Louisville is larger, as we go to press to-day, than it was on the corresponding day of last December, so that there is not likely to be any falling off in the class. The number, last session, was 261. Professors Flint and Palmer have fully sustained the reputation which they had acquired at the North as impressive and instructive teachers, and amply justified the choice of the judicious Board of Trustees. If delicacy permitted, we would like to enlarge upon the merits of our colleagues as lecturers, but we feel that we may safely leave their reputation with their pupils.

During the winter, it is the intention of the Faculty to issue a Catalogue of the students from the commencement of the institution, copies of which will be forwarded to the alumni or others desirous of possessing it, on application to the Dean.

We are pleased to learn that our friends in the Law Department have an unusually large class. Talents, attainments, and efforts to build up a first-rate school, such as theirs, ought to be successful, and it may safely be predicted will be.

OUR NEXT VOLUME.

Our Journal has now been in existence thirteen years. This number completes the 26th volume. It is the oldest medical journal in the West, and has been sustained so long that we cannot think of allowing it to come to an end, but on the contrary are making preparations to carry it on with renewed vigor. With our next issue we shall commence a new series, and hope to appear in a new type and upon paper of a better quality.

Our contributors also promise to give us more aid than they have done for sometime past. We do not like to make large promises, but we think we can assure our readers that they will find an improvement in our future numbers. We pledge ourselves to do all in our power to merit their approbation and patronage.

PROF. FLINT'S PRIZE ESSAY.

We have given up a large portion of the present number to the Prize Essay of Prof. Flint, assured that we could not devote it to matter more interesting to our readers. We need not bespeak for it their careful perusal; it may be be read again and again with advantage. The author will be found to have extended the boundaries of our knowledge in reference to this important subject.

THE DEATH OF DR. DRAKE.

Our readers will receive with deep sensation the intelligence of the death of Dr. Daniel Drake, long familiarly known to them as Senior Editor of this Journal. He died in Cincinnati, at 6 o'clock, on the evening of the 5th of Nov., of an affection of the brain, which he had been accustomed

to regard as of a congestive character. He was just about entering upon a course of lectures in the Medical College of Ohio, when attacked by the disease which terminated his useful life.

Dr. Drake was one of the pioneers of Medicine in the West, and one of the great men of the American medical profession. He was industrious, energetic, persevering, active, observant, and original. Of all the men with whom it has been our fortune to live on terms of intimacy, our impression is that he possessed the best mind—the most acute, analytical and comprehensive. He has left behind him, though in an unfinished condition, a work which, in our opinion, ranks first as an intellectual effort among the productions of American physicians. We trust that the second volume was so far advanced that his literary executors will have no trouble in completing it.

Dr. Drake had just entered his 68th year. He visited his friends in Louisville during the late session of the Kentucky Medical Society, and was here on the return of his 67th birth-day. His health appeared to be perfect, and no one could perceive any abatement of that clearness and strength of mind and activity of body for which he was so remarkable. As he was of a long-lived family, he had the prospect of a lengthened green old age before him. It is supposed that the anxiety and effort incident to the opening of the College to which he had returned so often, and concerning the success of which he had felt so keen a solicitude, had something to do in bringing on the fatal affection of his brain. It had long been his wish, often expressed, that he might die in Cincinnati and be followed to his grave by a large body of medical students and practitioners. His wish was gratified—and his friends have the consolation, not only that he lived long and usefully, but that his last hours were cheered by the hopes of the Christian.

Dr. Drake's life was eventful beyond that of most medical men. He was at once a laborious practitioner, a prominent public teacher, and a distinguished author. Entering into the practice of physic after attending one course of lectures, he had written a work which bore his name far beyond the boundaries of his own country before he returned to the University to graduate; and he had hardly taken his degree before he became a public teacher. He was a member of the first Medical Faculty ever organized in the Valley of the Mississippi, and took part in the first course of lectures; and his name is attached to the diploma of the first doctor ever graduated in the west. He was the first medical student in Cincinnati, and the first medical author.

Quitting the *Lexington Medical School*, after a single session, he returned to Cincinnati and procured a charter for the *Medical College of Ohio*, organized it, and in the fall of 1819 commenced a course of lectures in it. In the spring, as President of the Faculty, which filled and vacated its own board, he was dismissed by his two colleagues, one making the motion and the other seconding it, he in the chair putting the question. In 1823 he was again in Lexington lecturing with wonderful animation on Materia Medica in *Transylvania University*. Two years afterwards he was translated to the chair of Theory and Practice, and after two courses of lectures on that branch resigned his professorship and returned to his practice in Cincinnati.

In 1830 he was elected Professor of Theory and Practice in the *Jefferson Medical College* of Philadelphia, where he delivered a single course of lectures, resigning in the spring. The year following he organized the *Miami Medical College*, but a union of the new school with the Ohio Medical College having been brought about, he delivered a course of lectures on Clinical Medicine in the latter institution. In the spring he resigned. A few years later, he organized the *Cincinnati Medical College*. In 1839 he was invited to the *Medical Institute of Louisville*, where he labored until the spring of 1849, when he resigned his chair. The next winter he was found in his old chair in the *Medical College of Ohio*, from which he had been so unwisely expelled thirty years before. In the spring he again resigned; in the autumn he was recalled to Louisville, and after two courses returned to the Medical College of Ohio once more, where his eventful career has closed.

It would be with us a labor of love to write an eulogy upon our departed friend, but from the subjoined proceedings of the Medical Faculty of the University of Louisville, it will be seen that this task has been committed to one whose association with the deceased was longer and more intimate than ours.

At an early hour on Saturday morning, November 6, 1852, the Dean of the Medical Faculty of the University of Louisville announced to the medical class the melancholy intelligence of the death of Dr. Daniel Drake, so long identified with the University as Professor of the the Theory and Practice of Medicine, and late Professor of the Corresponding Chair in the Medical College of Ohio. As a mark of respect to the deceased, all further public exercises at the College were suspended until Monday. At a meeting of the Faculty at 5 o'clock, P. M., the following resolutions, offered by Prof. Gross, were unanimously adopted:

Whereas, it has pleased the Almighty Disposer of Events to remove from the scene of his earthly labors and the field of his usefulness and renown, Dr. Daniel Drake, Professor of Medicine in the Medical College of Ohio, and for many years a member of the Faculty of the University of Louisville, and whereas the deceased was greatly endeared to us by his many ennobling qualities, personal, social, and professional, by the great purity and uprightness of his life, and by his extraordinary mental endowments, his profound and various learning, and his zealous and untiring industry; therefore—

Resolved, That we have received with unfeigned sorrow the melancholy intelligence of the death of our late friend and colleague, who for so many years held and adorned the Chair of Theory and Practice of Medicine in this University, and who contributed so much to its elevation and usefulness.

Resolved, That in the death of Dr. Drake the American medical profession has lost one of its brightest ornaments, medical science one of its most zealous cultivators, and medical philosophy one of its most successful interpreters.

Resolved, That we will cherish his memory with affectionate regard and reverence, and that we acknowledge with the liveliest gratitude the debt which our profession and country owe to his labors and services.

Resolved, That this Faculty tender to the family of the deceased their heartfelt sympathy, and that the Dean be requested to transmit to them a copy of these resolutions.

Resolved, That these proceedings be published in the daily papers of the city, and in the Western Journal of Medicine, of which the deceased was for many years a distinguished editor.

On motion of Prof. Silliman, it was further—

Resolved, That Prof. Gross be requested to prepare a sketch of the life and services of Dr. Drake, as a memorial of the affectionate regard of this Faculty for a great and good man, and that the same be pronounced, if practicable, on some convenient occasion during the present session of this institution, before its officers and students.

L. P. YANDELL, Dean.

Since the foregoing was written, the following "Card" has been received, from which our readers will learn that the second volume of Dr. Drake's invaluable work will appear without any avoidable delay:

A Card.—The undersigned desires to make known to the medical

profession throughout the country, that the late Dr. Daniel Drake had prepared a considerable portion of the second volume of his work on the Diseases of the Interior Valley of North America; the printing of which it was his expectation to have commenced early in the ensuing year.

It is the desire and intention of his children that the portion so prepared should not be lost to the Profession. It will be immediately revised by a competent person, and put, as nearly as practicable, in a shape to make it, as far as he wroie it, available to the public. As soon as this is accomplished it will be published.

CHAS. D. DRAKE, of St. Louis.

November 18, 1855.

BOOKS RECEIVED.

"Simon's General Pathology" has been issued by Blanchard & Lea in their usual neat and tasteful style, and a copy of the work has been laid on our table. We shall hasten to give our readers some account of its valuable contents.

We are indebted to Lippincott, Grambo, & Co. for a superb work—the "*Operative Surgery*" of Henry H. Smith, M. D.—a work which, we feel very sure, is destined to take a high rank upon the writings on Surgery. In fulness of detail and elegance of execution it will compare with any volume yet issued from the American medical press.

PRIZE ESSAYS FOR 1853.

It will be seen from the following circular that two prizes of the value of $100 each are to be awarded by the American Medical Association at its next annual meeting, to the two best essays that may be offered.

American Medical Association.—At the meeting of the Association held at Richmond, Va., May 1852, the undersigned were appointed a committee to receive voluntary communications on medical subjects, and to award two prizes of $100 each to the authors of the best two essays.

Each communication must be accompanied by a sealed packet, containing the name of the author, which will be opened only in the case of the successful competitors. Unsuccessful communications will be returned on application after June 1st, 1853.

Communications must be addressed post-paid, to the chairman of the committee, Dr. Joseph M. Smith, 56 Bleecker street, New York, on or before the 20th of March, 1853.

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